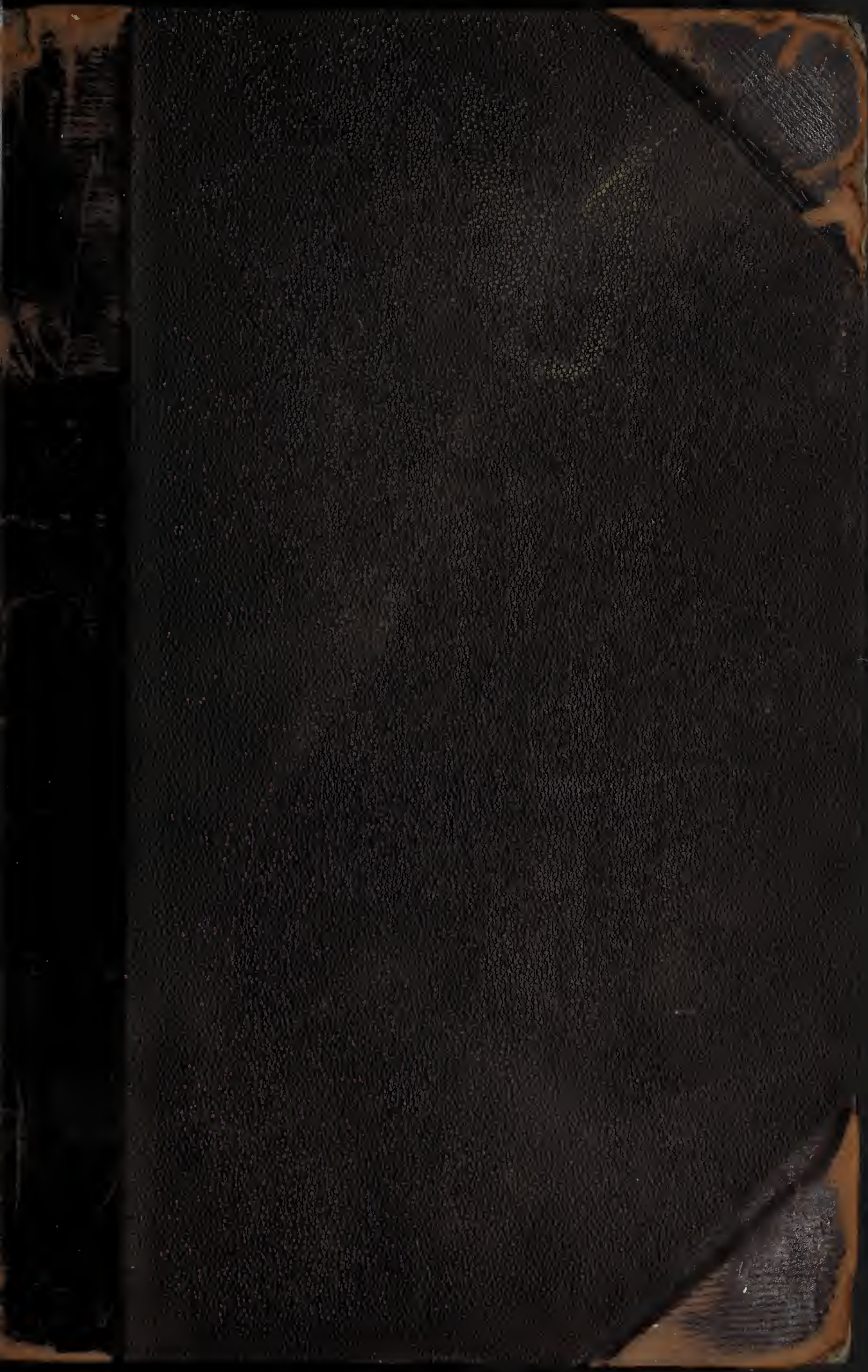

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THE METAL WORKER

VOLUME LVI.

JULY TO DECEMBER, 1901.

NEW YORK:
DAVID WILLIAMS COMPANY, PUBLISHERS, 232-238 WILLIAM STREET.

1902.

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INDEX TO VOLUME LVI.

Illustrated Articles Indicated by *

A.

A, B, C's, by Carolyn Wells, Nov 16, p 39
Abner Acetylene Gas Company, Aug 24, p 51
Accredited manufacturers of plumbers' brass work, Official list of, Oct 19, p 54
Acetylene:
  Acetylene gas abroad, Nov 9, p 50
  Hydrogen in acetylene, Nov 2, p 54
  Value of acetylene, Sep 7, p 52
Acetylene apparatus:
  The freezing of, Nov 9, p 53
  Trouble with, Oct 26, p 60
Acetylene generators:
  Abner, Aug 24, p 51
  Drake special, July 27, p 46*
  Hendler portable, July 20, p 40*
  New Swedish, Nov 23, p 45
  Selling generators, July 20, p 41
Acetylene stoves and their application. July 6, p 31
Address in correspondence, Nov 23, p 53
Adler, H., Company, Aug 17, p 41; 24, p 47; 31, p 43; Sep 7, p 42
Advertising:
  Fifty furnace "Ads," Aug 24, p 43
  Guessing contest, Aug 24, p 49
  Novel dodge, Oct 12, p 67
  Success in, Oct 5, p 38
  Unique dodger, Aug 17, p 44*
  (See also Window displays.)
Aeolipyle Combustion Company, Oct 5, p 40
Aerial navigation, July 27, p 35
Agricultural prosperity, Nov 23, p 34
Ahrens & Ott Works, fire, Sep 7, p 46
Air valves:
  Royal 1900, Aug 3, p 45*
  Vacuum heating systems valve, July 6, p 39*
Air washer and purifier, Thomas Acme, July 6, p 38*
Akers & Harpham, Nov 2, p 56
Alan Wood Company, Nov 9, p 57
Alcohol, Action upon metals, Aug 3, p 49
Alcohol consuming apparatus, Exposition in Paris, Oct 19, p 43
Allegheny Steel & Iron Company, July 13, p 52
Allen automatic air and vacuum valve, Oct 5, p 47*
Allis-Andrew tin plate process, Nov 30, p 45
Aluminum:
  Discovery in California, Oct 12, p 59
  Scrap aluminum, Oct 19, p 67
  Solders for, Sep 7, p 48
Aluminum alloy, A new, Nov 16, p 63
Aluminum Association, International, Sep 28, p 68
Aluminum furniture, Aug 24, p 56
Aluminum kitchen utensils, Oct 26, p 48*
Aluminum patent decision, Nov 2, p 47
Ambler, C. G. Short methods in figures, Aug 24, p 48
American Aluminum Association, Oct 19, p 47
American Electrical Heater Company, Oct 26, p 47
American exhibition in London, Nov 30, p 42
American Hardware Manufacturers' Association, Oct 19, p 44
American Radiator Company, Sep 21, p 52; 28, p 56; Oct 19, p 54
  Boiler plant at Buffalo, Nov 9, p 49
American Sheet Steel Company. (See Strikes, Sheet mill.)
American Society of Heating and Ventilating Engineers, July 20, p 33; Oct 5, p 47
American Tin Plate Company:
  Changes, Oct 26, p 54; Nov 2, p 55
  Manufacture of black plate, Nov 30, p 29
  Strikers and the company, Oct 5, p 56
Andirons, Ornamental, Aug 31, p 43*
Angles of special elbows, Pattern for, Sep 28, p 63*
Ants, Red pepper for, Sep 14, p 62; Oct 5, p 58
Apple corer pattern, Dec 21, p 43*
Apple cutter and corer, Aug 17, p 45*
Arkansas Retail Hardware Dealers' Association, July 6, p 35
Art Stove Company, July 13, p 40
Artistic Enameling Works, Oct 5, p 43
Asbestos air cell coverings, Gast, Nov 16, p 48
Asbestos sad iron, Oct 12, p 50*
Asphalt cement and rust, Nov 2, p 58
Atlantic Coast Master Plumbers' Association, Dec 14, p 43
Atlas Glass & Metal Company, Nov 23, p 46
Australasian National Association of Master Plumbers, Oct 12, p 52
Australian plumbing trade, Competition in, Dec 7, p 42
Australian tariff, Nov 16, p 37
Austria, Industrial crisis in, Nov 23, p 52
Austrian commercial expedition, July 6, p 30
Automatic Wringer Company, Dec 14, p 35

B.

Bacteria, Freezing out, Oct 19, p 53
Bagging live gas mains, Nov 23, p 45
Bailey patent pipe couplings, Oct 19, p 52*
Baker, M. N. The water meter as a sanitary agent, Nov 9, p 49
Baltimore Master Plumbers' Association, Nov 23, p 44
Barbour, E. S., Marriage of, Oct 26, p 43
Barbour Hardware Company, Keeping track of jobs, Aug 31, p 53
Baron de Hirsch Trade School, July 20, p 46
Barrus apparatus for testing steam pipe coverings, Dec. 14, p 44
Bartlett, J. C., Company, Aug 3, p 37
Bath, Advantages of the spray, Nov 9, p 50
Bathroom specialties, Oct 12, p 52; 26, p 47, 51
Bathtubs, Enameled, The situation of, Aug 31, p 48
Bayles, J. C. A challenge of scientific axioms, Dec 28, p 36
Beaton & Corbin Mfg. Company, Sep 14, p 55
Beckwith, P. D., Sep 14, p 51
Behrer & Co., New York, Oct 12, p 52
Benedict & Burnham Mfg. Company, July 13, p 53
Bergstrom Bros. & Co., Aug 17, p 42
Besly polishing machine, Nov 2, p 47*; 9, 48*
Best Street Light Company, Aug 31, p 44
Bibb, B. C., Company, Sep 21, p 45
Bickelhaupt Skylight Works, Aug 24, p 58
Bicycle emery grinder, Oct 19, p 62*
Blast furnace statistics, July 13, p 38
Bliss, E. W., & Co., Oct 5, p 55; 12, p 60
Blue prints, Water proof, Sep 21, p 62
Boal, Stanhope, Loving cup for, July 13, p 39*
  p 39*
Boats, Sheet metal, Aug 10, p 54
  Two-piece sheet metal, Dec. 14, p 37*; 28, p 48
Boiler connections:
  Boiler in bathroom over kitchen, Sep 14, p 62*
  Connecting under difficulties, July 13, p 56*
  Door between range and boiler, Aug 17, p 56*
  Questions, Sep 28, p 63*
Boiler difficulties:
  "Fault of the boiler," Nov 9, p 51
  "It's striking, but is it art?" Nov 9, p 52
Boiler manufacturers affiliate, Oct 26, p 51
Boiler trade, Aug 17, p 46; Nov 16, p 49; Dec 14, p 29
Boilers:
  Champion hot water, Aug 10, p 49
  Comfort, Aug 10, p 48*
  Demarest, Dec 21, p 28
  European heating boilers, Nov 23, p 33, 40*; Dec 7, p 38*; 21, p 36*
  Gorton, Aug 24, p 51
  Henderson-Thermo, July 6, p 37; 13, p 45*
  Ideal, Sep 21, p 52
  Imico, Aug 10, p 50; 17, p 48*
  Kewanee, Oct 12, p 52
  Magee 019-190, Aug 3, p 46*
  Mueller, Aug 10, p 49*
  Quality of range boilers, July 27, p 43
  Rating of boiler, Dec 28, p 47*
  Removing scale, Nov 16, p 50
  Royal, Aug 31, p 47
  Solvents introduced into boilers, Nov 23, p 44*
  Thatcher, July 13, p 46
  Walker, Oct 5, p 50*
  (See also Furnaces; Water heaters)
Bolt, Brohard expansion, Nov 23, p 52*
Bonney, F. E. Personality and human nature as elements of commercial success, Nov 16, p 42
Bookcase, Sheet metal, Sep 7, p 50*
Book reviews:
  Business Sketches in America, Aug 3, p 37
  Contract and Estimate Record Book for Plumbers, B. H. Jessup, Dec 14, p 45
  Electric Gas Lighting, H. S. Norrie, Dec 21, p 46
  Errors in Science Teaching, C. S. Gager, Dec 24, p 46
  Guide to Bronzing and Enameling, Aug 17, p 40
  Hand Book of Practical Mechanics, C. H. Saunders, Nov 30, p 50
  Hardware Store Business Methods, Aug 31, p 44
  House Chimneys, July 20, p 56
  Merchants' Red Book, Oct 12, p 60
  Plumbers' Manual and Text-Book, Oct 19, p 56
  Ratios of Tin Plate Sizes, Sep 14, p 59
  Roofing, Cornice and Skylight Manual, Sep 28, p 62
Born Steel Range Company, Oct 26, p 42
Boss Washing Machine Company, Oct 26, p 47; Nov 9, p 46
Boynton Furnace Company, Oct 19, p 41
Brass, Brazing to copper, July 20, p 46
Brass goods:
  Farnan, Sep 28, p 55
  Glauber, July 6, p 37
Brass Goods Association, Dec 14, p 44
Brass wire, Curious products in, Nov 10, p 57
Brazing, Oct 19, p 62
British Institution of Heating and Ventilating Engineers, Aug 24, p 52; Nov 23, p 43
Brohard expansion bolt, Nov 23, p 52*
Brooklyn Master Plumbers' Association, July 27, p 47
Brucker, M., Chicago, Aug 31, p 43
Brush, Dustless floor, July 27, p 40*
Bryan vacuum molding machine, Nov 16, p 40
Bryce, G. H. Ventilation and heating of buildings, Oct 19, p 48
Buck's Stove & Range Company, Sep 14, p 52
Buckwalter Stove Company, Oct 12, p 46

Building activity in New York, Oct 5, p 37
Building skyscrapers in London, Nov 30, p 30
Building trade, Sharks in, Oct 19, p 51
Burritt, O. W., & Brother, Aug 24, p 48
Business failures, July 13, p 37
Business methods, Dec 14, p 30
  Bad accounts, July 20, p 38
  Buying carefully, Aug 17, p 40; 31, p 40; Sep 7, p 39; 21, p 41; Nov 23, p 33
  Collection, The art of, Aug 24, p 41; Dec 28, p 42
  Costs of doing business, July 13, p 44; Oct 26, p 37
  Credit sales and collection of accounts, Oct 19, p 46
  Keeping track of shop work, Aug 31, p 53; Dec 21, p 38
  Office rules, Sep 14, p 54
  Short methods in figures, Aug 24, p 48
Business situation:
  Effect of car shortage, Nov 9, p 38; 30, p 29; Dec 28, p 27
  Labor fully employed, Nov 2, p 36
  Opening of fall trade, Sep 7, p 37
  Promising outlook, Sep 28, p 45
  (See also Prices)
Butler leather fillet, Nov 2, p 54*
Buying close, Nov 23, p 33
Buying for plumbers and metal workers, Aug 17, p 40; 31, p 40; Sep 7, p 39; 21, p 41

C.

Calcium carbide in Germany, Aug 24, p 51
California, A voice from, Sep 28, p 50
Cameron & Parks, Philadelphia, Oct 19, p 45
Camp stove, Folding, Aug 3, p 39*
Canada:
  Effect of steel strike, Aug 24, p 57
  Higher commercial education, Oct 12, p 44
  Trade with Canada, Dec 7, p 37
Canadian National Association of Master Plumbers and Steam Fitters, July 6, p 37
Canning Machinery Company, July 20, p 47
Cans, Milk, Proportions for, Nov 30, p 47
Car shortage, Effect on business, Nov 9, p 38; 30, p 29; Dec 28, p 27
Carnahan Stamping & Can Company, July 20, p 47
Carnegie technical school, July 6, p 30
Carnegie Tube Company, Dec 14, p 43
Carpenter, R. C. Tests of radiators with superheated steam, July 20, p 41
Case hardening metals, Oct 19, p 62
Cast iron soil pipe situation, Nov 30, p 39
Cast iron pipes, Life of, Dec 7, p 41
Caster, X L C R ball bearing, Sep 28, p 61*
Caterer, Automatic, Oct 5, p 53
Cellar, Water tight, Aug 24, p 61; 31, p 56
Cement, Uses of, July 20, p 46
Central Foundry Company, Changes, Nov 23, p 46
Central Stamping Company, Aug 3, p 43
Central station heating, Sep 7, p 45; Oct 19, p 39; Nov 2, p 35
Central Supply Association, Nov 2, p 50
Challenge of scientific axioms, Dec 28, p 36
Challenge Refrigerator Company, Dec 14, p 35
Champion Steel Range Company, Sep 14, p 50
Chapter house, Heating a, Nov 9, p 39*
Charleston Exposition, Dec 7, p 27
Check and voucher combined, Oct 12, p 48
Cheese hoops, Sturgis seamless, Aug 3, p 42*
Chicago Retail Hardware Dealers' Association, July 27, p 40; Dec 7, p 31
Chicago Stove Works, Aug 3, p 39
Chicago Tin Plate & Can Company, July 20, p 47
Child, E. T. Hot water heating, Nov 2, p 48
Chimney and fire place construction, Sep 7, p 42
Chimney base, Floyd, Wells & Co., Sep 7, p 43*
Chimneys:
  Back draft from chimney, Nov 16, p 59*
  Chimney does not draw, Nov 9, p 60*
  Improper construction, Nov 23, p 48
  Tops and ventilators, Nov 30, p 42
  Ventilators for back draft, Nov 23, p 56; Dec 7, p 48
Christmas carol, Dec 28, p 32
Christmas in the stove and tin shop, Dec 7, p 32
Church furnace, Constructing a, Nov 2, p 59*; 9, p 59; 16, p 59; 23, p 55
Clapp, Chester D., Sales and collections, Oct 19, p 46
Clark, G. M., & Co., Aug 3, p 40; 24, p 52
  Buffalo exhibit, Aug 17, p 42*
Clayton & Lambert Mfg. Company, Sep 21, p 52; Oct 19, p 51
Clevelaud and Chicago resolutions, Nov 16, p 35, 45
Cleveland Window Glass Company, Aug 3, p 44
Climax Nut, Lock & Mfg. Company, Aug 17, p 47
Clothes line holder, Nov 2, p 57*
Coal:
  Demand for American, in Europe, Dec 7, p 28
  Production of 1900, July 13, p 38; Aug 10, p 59
  Soft coal for domestic use, Dec 28, p 29
Coal hod, Novelty, Nov 30, p 34*
Coating terne plates, Nov 16, p 55
Coating tin plates, Machine for, July 20, p 48
Coe Brass Company's purchase, Aug 3, p 49
Coil in furnace, July 13, p 54*
Coils in stoves, Use of, July 20, p 41
Collection, The art of, Dec 28, p 42
Colors, Sources of, Sep 21, p 62
Commerce, School of, in New York, Dec 21, p 27
Compulsory arbitratiou in New Zealand, Nov 9, p 37
Confederated Supply Associations, National Committee, Oct 5, p 50; 26, p 49; Nov 16, 35, 45
Connecticut Association of Master Plumbers, July 20, p 43
Cooling and warming of closed air spaces, Dec 28, p 38
Consolidations, Difficulties of, Sep 21, p 41
Contracts with time limits, Oct 5, p 38
Co-operative Foundry Company, July 20, p 36
Copper:
  Adulteration of sheet, Dec 28, p 48
  Welding, July 6, p 46
Copper situation, Oct 5, p 37; Nov 16, p 35
Coruice maker, What he should know, Dec 14, p 40; 21, p 42; 28, p 43
Correspondeuce, Form of address in, Nov 23, p 53
Corrugated galvanized irou and steel duty, Nov 9, p 64
Cost of living, Higher, Nov 16, p 36
Costs of doing business, July 13, p 44; Oct 26, p 37
County fair exhibits, Sep 28, p 47
Cover for wash boiler, Pattern for, Dec 28, p 44*
Cowl, Ship ventilating, Aug 17, p 51*
Crane Company, New York, Sep 28, p 55
Credit sales and collection of accounts, Oct 19, p 46
Cribben & Sextou Company, Sep 14, p 51
Crude oil portable heating furnace, Nov 2, p 46*
Crude oil or tar burner, Sep 14, p 57*

D.

Damper regulator, Morgan, Aug 31, p 47*
Danville Stove & Mfg. Company, Sep 7, p 43
Danzer's Lightning edger, Dec 14, p 39*
Day Metallic Mfg. Company, Oct 12, p 57
Dayton Stove Repair Works, Oct 26, p 43
Defiance grinding and polishing machine, Nov 23, p 53*
Detroit Stove Works, Aug 24, p 45*; Sep 28, p 50
Diamond Stamped Ware Company, Oct 26, p 52
Dietz, R. E., Company, Oct 19, p 47
Dimensions for plumbers, Aug 31, p 46
Discounts, A question of, Sep 14, p 48
Distribution of goods, Economical, Oct 12, p 49
Domestic Garbage Burner Company, Aug 3, p 43
Donner process of rolling black plate, Oct 19, p 58
Dover Mfg. Company, Oct 12, p 50
Drake acetylene generator, July 27, p 46*
Drawing board, Details of an upright, Nov 16, p 58*
Drill rack, Handy, Oct 26, p 64*
Drought, The, July 27, p 35
Drying oven, Trouble with, Aug 31, p 55*; Sep 7, p 53; 21, p 57*
Du Bois, F. N., Company, Sep 21, p 52
Dust, Avoiding, in stores, Sep 21, p 47
Dust causes impure air, Nov 30, p 39; Dec 21, p 28
Dwelling houses, Decline of individual, in New York, Dec 28, p 28

E.

Earth closet, Substitute for, Dec 14, p 47
Eccentric fittings and their use, Nov 2, p 51
Eclipse Stove Company, Aug 10, p 45
Economy Stove & Mfg. Company, Oct 26, p 43
Eddy, W. H., Company, Aug 17, p 54
Edger, Danzer's lightning, Dec 14, p 39*
Education:
  Education for plumbers, Oct 19, p 53
  Gifts to, Dec 21, p 27
  Higher commercial, Dec 21, p 27
  Importance of technical, Nov 23, p 34
Edwards Mfg. Company, July 27, p 53
Elbow springing from pipe, Pattern, Oct 26, p 55*
Electric air heater, Oct 26, p 47*
Electric city gutter former, Nov 16, p 57*
Electric effect in a church, Aug 31, p 60
Electric fire hazard, July 6, p 46
Electric heating, Oct 19, p 39
Electric Smelting & Reducing Company *vs.* Pittsburgh Reduction Company, Nov 2, p 47
Electric water heaters, Dec 7, p 41*
Elliptical pipe and scalene cone, Intersection of, Nov 30, p 44*
Emmert Mfg. Company, Aug 24, p 50
Enameling process, New, Sep 7, p 49
English plumbers' guild, Ancient, Oct 19, p 52
Enterprise Mfg. Company, July 6, p 36; Oct 19, p 41
Export trade:
  Export houses and the cultivation of foreigu trade, Nov 2, p 35; 9, p 37; 23, p 34
  Manufactures, July 27, p 35
  Packiug goods, Aug 10, p 37
  Studying foreign business methods, Dec 7, p 27
  Tin plate, Aug 3, p 50
  United States, Oct 26, p 54

F.

Failures iu business, July 13, p 37
Fall trade, Openiug of, Sep 7, p 37
Farnan Brass Works, Sep 28, p 55
Federal Boiler & Supply Company, Dec 14, p 43
Figures, Short methods in, Aug 24, p 48
Fillet, Butler leather, Nov 2, p 54*
Filter for a cistern, July 20, p 51; Aug 17, p 55*
Fire hazards of heating systems, Sep 21, p 53
Fire losses, July 13, p 37

Fire proof buildlng material, Tests of, Sep 7, p 38
Fire proof construction, Test in Chicago, Nov 9, p 48
Flanges, Standardization of extra heavy, Oct 12, p 54
Fletcher, Russell & Co., Warrington, England, Nov 9, p 43
Float, Detroit Stove Works, Aug 24, p 45*
Floor plate, Beaton & Corbin, Sep 14, p 55*
Floyd, Wells & Co., Aug 31, p 43; Sep 7, p 43
Fluted bottom of circular bay, Patterns for, Nov 23, p 54*
Folsom, C. G. Hot air furnace heating, July 27, p 44*
Foreign trade. (See Export trade.)
Fork pattern, Oct 5, p 54*
Fowler Radiator & Mfg. Company, Aug 17, p 46; 31, p 46
France:
  Plumbing and sanitary appliances, Oct 19, p 50
  Settlement of labor disputes, Nov 9, p 44
Freight car shortage, Nov 9, p 38; 30, p 29; Dec. 28, p 27
Freight charges and back orders, Aug 31, p 39
Fresh air duct, Construction of, Dec 7, p 47*
Frost on windows, Dec 7, p 47*; 14, p 46*
Fruit picker, Eclipse, July 13, p 42*
Fuel economizers, Oct 5, p 45
Funnel and spout pattern, Dec 7, p 36*
Furnace casings and piping, Aug 24, p 43
Furnace difficulties:
  Popular ignorance, Nov 16, p 38
  Small flues hinder heating, July 13, p 55*; 20, p 51; Aug 13, p 53
Furnace heating. Hot air, July 27, p 44*
Furnace pipes. Discrepancy in proportioning. Dec 14, p 32
Furnace trade, Increasing, July 27, p 38
Furnace work:
  Better, Oct 26, p 41
  Calculations for, Dec 21, p 30
  Hard knots in furnace practice, Dec 28, p 30
Furnaces:
  Beacon Sunshine, Nov 30, p 34
  Boynton, Oct 19, p 41
  Brien heater, July 13, p 40*
  Chappell hot air, Nov 9, p 42
  Constructing a church furnace, Nov 2, p 59*; 9, p 59; 16, p 59; 23, p 55
  Crude oil heating furnace, Nov 2, p 46*
  Etna hot air, Aug 10, p 39
  European warm air furnaces, Nov 2, p 36, 38*
  Favorite, Nov 9, p 43
  Forbes, Aug 24, p 44
  Gas furnaees, Aug 3, p 37; Oct 19, p 41*
  Hustler, Oct 26, p 45*
  Installing furnace plants in old houses, Oct 5, p 41*
  Jahant hot blast, July 20, p 36
  Monitor, July 6, p 32
  Mueller, Aug 24, p 43; Nov 9, p 53
  Natural gas, Aug 3, p 37; 10, p 40*; 24, p 47*
  Robinson, July 13, p 41
  Thatcher, Oct 12, p 46
  Tropic Sunshine, Nov 30, p 34
  Ventilation problems, Dec 28, p 30
  Welcome, Sep 14, p 49
  (See also Boilers: Water heaters.)

G.

Galesburg Cornice Works, Aug 10, p 53
Galvanized tank, Crating for, July 13, p 55; 20, p 51; 27, p 55
Galusha Stove Company, Aug 3, p 39
Galvanized iron, Coating for, Dec 14, p 47
Galvanized ware in Great Britain, Aug 3, p 42*
Gara, McGinley & Co., Philadelphia, roofers, Oct 26, p 57
Garbage briquette fuel, Oct 5, p 57
Garbage burner, Domestic, Aug 3, p 43
Garbage cans, Best-of-all, Aug 3, p 43*
Garbage receptacle, Portable pivoted, Oct 19, p 45*
Gas:
  Mond gas in Great Britain, July 6, p 52
  Production from air, Nov 23, p 52
  Production from gasoline, Nov 30, p 47
Gas by pass for window lighting, Sep 7, p 45*
Gas fields of the West and Texas, Aug 10, p 54
Gas furnaces:
  Pennsylvania, Aug 3, p 37
  Thompson, Oct 19, p 41*
Gas mains, Bagging live, Nov 23, p 45
Gas meter connections, Novelty, Aug 24, p 51*
Gas radiator, Acme, Sep 7, p 42*
Gas stove trade, July 27, p 38; Oct 26, p 44
Gas stoves:
  Acme, Aug 17, p 41
  Fire King, Oct 5, p 44*
  Jewel, Aug 3, p 40
  Monarch, Sep 14, p 50
  Monogram, Aug 31, p 43*
  Odin, Dec 7, p 30
  Profitable distribution of, Nov 30, p 33
  Real Economy range, Oct 26, p 43*
  Reliable, Nov 16, p 39
  Vaporizing stoves, Nov 16, p 39
Gasoline engine, Sterling portable, Aug 17, p 54*
Gasoline fire pots and torches, Sep 21, p 52; Oct 19, p 51
Gasoline gas generator, Climax, Aug 17, p 47*
Gasoline gas lighting apparatus, Sep 21, p 53*
Gerhard, Wm. Paul. Advanced plumbing, Aug 24, p 53; Oct 5, p 48
German Heating and Ventilating Trades, Convention, Sep 28, p 46, 54
Gilchrist & Means, Aug 3, p 42
Gill stove, Old, July 27, p 37
Glass:
  Cleveland prism, Aug 3, p 44*
  Composition of glass, Sep 28, p 53
  Drilling holes in glass, Sep 21, p 62
  Possibilities in manufacture, July 20, p 31
  Quality of window glass, Sep 7, p 54
  Test of wire glass, July 6, p 46
Glauber Brass Mfg. Company, July 6, p 37
Glines, George, a hustling roofer, July 20, p 48
Glue size, Making, Aug 3, p 49
Gold Coin Stove Company, Aug 17, p 43
Golf in the Chicago heating and plumbing trade, Nov 2, p 51
Goodell Company, Oct 19, p 45
Gorton & Lidgerwood Company, Aug 24, p 51
Gould's spray pump, Dec 28, p 32*
Graff Furnace Company, Sep 14, p 50
Graphite, Nov 16, p 43
Grinder, Bicycle emery, Oct 19, p 62*
Grinding and polishing machine, Defiance, Nov 23, p 53*
Grinding mill, Tennessee, Dec 28, p 33*
Guaranteeing prices, Dec 28, p 27
Gurney Heater Mfg. Company, Sep 7, p 48
Gurney Refrigerator Company, Aug 3, p 41
Gutter former, Electric City, Nov 16, p 57*

H.

Hampton Normal and Agricultural Institute, Oct 19, p 43
Hangers for clothes, Nov 2, p 43*; 9, p 46*
Hardware jobbing interests, Consolidation of, Sep 28, p 46; Oct 5, p 39
Hardware merchants:
  November work, Nov 2, p 37
  Retailer: his rights and his power, Aug 31, p 45
Hardware trade, Effect of steel strike, Sep 7, p 44
Hart & Crouse Company, Aug 31, p 47
Hauss, C. F.:
  American stoves in Europe, July 20, p 35
  European heating boilers, Nov 23, p 33, 40*; Dec 7, p 38*; 21, p 36*
  European warm air furnaces, Nov 2, p 36, 38*
Heath, Chas. C. & Co., Philadelphia branch, Dec 7, p 30
Heating:
  Air in hot water systems, Nov 16, p 47
  Central station heating, Sep 7, p 45; Oct 19, p 39; Nov 2, p 35
  Chapter house, in Syracuse, N. Y., Nov 9, p 39*
  Coil in furnace, July 13, p 54*
  Coils in stoves, July 20, p 41
  Cooling and warming of closed air spaces, Dec 28, p 38
  Dust causes impure air, Nov 30, p 39; Dec 21, p 28
  Electrical heating, Oct 19, p 39
  European furnaces, Nov 2, p 36, 38*
  European methods, Nov 23, p 36
  Exhaust hot water heating, Nov 30, p 40
  Expansion tank boils, Dec 21, p 47*
  Fire hazards of heating systems, Sep 21, p 53
  Forced blast heating, Nov 2, p 50
  Heating hindered by help, Nov 16, p 47*
  Hot water heating, Nov 2, p 48*
  Municipal plant, Goshen, Ind., Sep 7, p 45
  Natural gas furnace system, Aug 10, p 37, 40*
  Pipe coil air bound, Oct 19, p 63*
  Principle of heating, Oct 19, p 48
  Relative advantages of hot water or steam, Nov 16, p 48
  Rules and Tables for heating work, Dec 14, p 33
  Sanitary heating, July 13, p 54
  School house heating, Sep 21, p 58*; Oct 5, p 58*; 12, p 62*; Nov 2, p 50
  Science of heating, Present state of, Oct 12, p 55
  Ships to be heated from shore plants, Nov 30, p 39
  Utilizing waste heat, Dec 7, p 48*; 14, p 47*
  Utilizing waste heat from steam mains, Dec 21, p 38
  Vacuum steam heating system, Morgan, Oct 12, p 53*
  Volume of water in hot water heating apparatus, July 20, p 43*
  Water heating, Sep 28, p 57
  (See also Boilers; Furnaces; Gas stoves; Stoves.)
Heating, Ventilating & Foundry Company, July 13, p 46
Henderson Thermo steam heater, July 13, p 45*
Hendler portable acetylene generator, July 20, p 40*
Hercules Specialty Company, Dec 14, p 36
Holder-Athey Hardware Company cooking exhibit, Nov 30, p 33
Holiday trade, Dec 28, p 27
Hollow ware, Wagner, Oct 19, p 47
Hood coupling, Vanderman, Dec 28, p 32*
Hooks:
  Jenckes ceiling, July 27, p 42*
  King coat and hat, Sep 14, p 54*
  Safety ladder hook, Sep 28, p 53*
Hopper and chute for lead, Sep 28, p 56*
Hose, Woven steel covered, July 20, p 38*
Hose coupling, Sherman, Oct 19, p 44*
Hose pipe, Keene combination, Oct 5, p 50*
"Hot air," Oct 5, p 49
Hot air furnace heating, July 27, p 44*
Howard Thermostat Company, Nov 23, p 46
Hubbell riveting machine, Dec 28, p 37*
Hydrogen in acetylene gas, Nov 2, p 54

I.

Ice machine, July 20, p 51
Ice pick, Gilchrist & Means, July 6, p 35*

Ideal Mfg. Company, Cutting and threading to sketch, Nov 23, p 46
Illinois Malleable Iron Company, Aug 10, p 50; 17, p 48
Illinois Retail Hardware Dealers' Association label, Nov 2, p 59
Imperial wall radiator, Aug 31, p 46*
Incandescent Lighting & Stove Company, Sep 21, p 53
Independent Register Company, July 6, p 33
India, Fittings wanted in, July 6, p 37
Indiana Retail Hardware Dealers' Association, Dec 7, p 32
Industrial progress in the United States, Dec 14, p 29
Installing furnace plants in old houses, Oct 5, p 41*
International Aluminum Association, Sep 28, p 68
International Correspondence Schools of Scranton, Aug 17, p 40; Oct 26, p 38; Dec 7, p 28
International Exhibition of Modern Decorative Art, July 6, p 41
International Heater Company, July 27, p 37, 43; 46
International Metal Lath Company, Sep 28, p 61
International Tin Plate Company, Nov 9, p 57; 16, p 53
Inventory suggestions, Dec 28, p 34
Iron, Lead coating for, Nov 30, p 38
Iron and steel statistics, Dec 7, p 46
Iron production, Pig iron, Increasing, Oct 12, p 43; Nov 16, p 36; Dec 14, p 29
Iron trade and labor troubles, Sep 21, p 42

J.

Japan, Labor in, Oct 19, p 40
Jenckes, E., Mfg. Company, July 27, p 42*
Jobbers of plumbers' supplies, Protection for, Oct 5, p 51
Jobbing interests, Hardware, Consolidation of, Sep 28, p 46; Oct 5, p 39
Johns, H. W., Paint Mfg. Company, Nov 23, p 50
Joint, Reese soldered standing, July 13, p 49*; 27, p 55

K.

Kaiser, M. L.:
  Installing furnace plants in old houses, Oct 5, p 41
  Two-piece sheet metal practice boat, Dec 14, p 37*
Kalamazoo Stove Company, July 6, p 32
Keene hose pipe, Oct 5, p 50*
Keeping track of shop work, Aug 31, p 53; Dec 21, p 38
Keighley, S., Metal Ceiling & Mfg. Company, Oct 5, p 56
Keith Furnace Company, July 6, p 32
Kewanee Boiler Company, Oct 12, p 52
Kieley & Mueller goods, Sep 14, p 55
Kiskiminetas Valley Mills, Nov 2, p 56
Kitchens:
  A royal kitchen, Aug 24, p 56
  Russia's traveling army, Nov 9, p 47
Kittredge, G. W. Problem 218, July 13, p 38, 50*

L.

Labor:
  Compulsory arbitration in New Zealand, Nov 9, p 37
  France, Settlement of disputes, Nov 9, p 44
  Japan, Oct 19, p 40
  Profit sharing in England, Sep 7, p 38
  Scarcity of labor in the Northwest, Aug 3, p 54
  Skill in labor, Sep 14, p 47
  Union victories, Some kinds of, Aug 31, p 39
Labor contracts, Keeping, Aug 24, p 41
Labor unions, Incorporation of, Sep 7, p 37
La Crosse Steel Roofing & Corrugating Company, Aug 24, p 58
Ladders:
  Hercules, Dec 14, p 36
  Millradt, Aug 17, p 45*
Lake Erie Specialty Mfg. Company, Dec 21, p 40
Lalance & Grosjean Mfg. Company, Changes, Sep 7, p 44
Lamb & Ritchie, July 20, p 44
  Buffalo exhibit, Nov 2, p 50
Lamps:
  Miller, July 20, p 38*; Nov 9, p 45
  Turner Little Wonder, Oct 12, p 50*
Lanterns:
  Defiance cold blast, Dec 14, p 35*
  Dietz, Oct 19, p 47
Lath, Herringbone, Sep 28, p 61*
Laughlin Nail Company, New sheet mill, Dec 14, p 39
Lavatory, Enameled one-piece, Aug 17, p 46*
Lawson Novelty Company, July 6, p 36*
Lead, Use of in olden times, Nov 2, p 52
Lead burning, Aug 3, p 45
Lead coating cast iron, Nov 2, p 57; 30, p 38
Lead melting furnace, July 27, p 45*
Lead pipe destroyed, Sep 21, p 58; Oct 5, p 58
Lead scrap, Nov 2, p 45
Leather, Artificial, Aug 17, p 50
Lemon squeezer, Modern, Aug 3, p 42*
Letter box, July 6, p 47; 13, p 54; 20, p 51; 27, p 55; Aug 3, p 53; 10, p 54; 17, p 55; 24, p 60; 31, p 55; Sep 7, p 53; 21, p 57; 28, p 63; Oct 5, 58; 12, p 62; 19, p 62; 26, p 59; Nov 2, p 58; 23, p 54; 30, p 47; Dec 7, p 47; 14, p 46; 21, p 47; 28, p 47
Lighting apparatus, Gasoline gas, Sep 21, p 53*
Lighting methods in England, Sep 7, p 52
Lighting windows, Gas by pass for, Sep 7, p 45*
Lime, Superphosphate of, Dec 7, p 47
Lindemann, J. P., & Sons Oct 5, p 40
Linseed oil, Adulterated, Dec 28, p 37
Locomotive, Advertising, July 6, p 36
Lodging houses, Cheap, in Milan, Italy, Oct 5, p 62
Logan-Gregg Hardware Company, Oct 12, p 48
Loth, W. J., Stove Company, Sep 14, p 51
Louisiana Purchase Exposition, Sep 28, p 68
Loving cup for Stanhope Boal, July 13, p 39*
Lufkin Rule Company, Aug 24, p 49

M.

M. & D. Range Company, Sep 14, p 52
Mackay, W. M. Volume of water in hot water heating apparatus, July 20, p 43*
Mackie Steel Tube Mfg. Company, Aug 3, p 59
Magee Furnace Company, Aug 3, p 46
Mahood & Co., Stove repairs, Sep 7, p 41
Makin-Kelsey Heating & Mfg. Company, Dec 14, p 43
Malay Peninsula, Tin mining in, Aug 3, p 51
Malleable Iron Fittings Company, Oct 5, p 46
Managers of men, Aug 31, p 39
Mangle, Lawson No 21, July 6, p 36*
Manufactures, Exports of, July 27, p 35
Manufacturing plants, Concentration of, Aug 24, p 59
Marble, removing rust and grease from, Oct 19, p 63
March-Brownback Stove Company, Aug 3, p 38
Mark Mfg. Company, Sep 7, p 45
Maryland Sheet & Steel Company, Nov 30, p 51; Dec 7, p 36
Maxson & Maxson Company, July 13, p 43
McKinley, William, Death, Sep 21, p 41
McLain, Frank C., Company, Nov 16, p 49
McLain, J. H., Company, Aug 31, p 47
McMurtry, G. G., and Vandergrift, Aug 24, p 41; Nov 30, p 36
Measurements, Delicate, Oct 19, p 63
Meat chopper, National, Nov 9, p 45*
Merchants' Legislative League of New York State, Oct 12, p 63
Merchants' Red Book, Oct 12, p 60
Metal polishes, Oct 19, p 60
Metal Workers' School in Saxony, Aug 3, p 52
Metric system, Oct 19, p 40
  Advantages of to Americans, Nov 16, p 36
Metric wire gauge, Griswold, Nov 2, p 59*
Mexico:
  Customs tariff, Dec 7, p 52
  Heating goods in Mexico, Nov 16, p 39
  Trade with Mexico, Nov 23, p 35
Michigan Barrel Company, Dec 14, p 35
Michigan Retail Hardware Dealers' Association, Aug 3, p 41; 17, p 43; 24, p 47
Michigan Stove Company, July 20, p 34; Sep 14, p 51; 21, p 45; Oct 12, p 46; 26, p 43
  Buffalo exhibit, Aug 3, p 38*
  Catalogue, Aug 10, p 44
Milbradt, G. A. & Co., Aug 17, p 45
Millar, Charles, & Son, Oct 12, p 54
Miller, J. Leslie, Portrait, Aug 24, p 43*
Miller & Co., Lamps, July 20, p 38*; Nov 9, p 45
Milwaukee Dustless Brush Company, July 27, p 40*
Mineral production of the United States, Oct 19, p 63
Mineral rods and magnetic needles, Dec 21, p 48
Molders' coference, July 6, p 46
Molding machines:
  Bryan vacumm, Nov 16, p 40
  Standard round, Aug 17, p 54*
Monarch Stove Mfg. Company, Sep 14, p 50; Dec 14, p 33; 21, p 30; 28, p 31
Monash-Younker Company, Oct 12, p 53
Monessen works, Enlarging, Oct 5, p 56
Monongahela Valley Retail Hardware Dealers' Association, July 27, p 41; Nov 30, p 35
Monuments of sheet steel, Nov 16, p 54*
Mop head, Gem, Aug 24, p 50*
Morgan & Co., Chicago, July 6, p 39; Aug 31, p 47
Morgan vacuum steam heating system, Oct 12, p 53*
Mott porcelain fixtures, Nov 2, p 50
Mueller, L. J., Furnace Company, Aug 10, p 49; 24, p 43
Municipal hot water heating plant, Sep 7, p 45
Murdock, A. J. Acetylene stoves and their application, July 6, p 31
Museums of sanitation, Sep 28, p 45
Muskat, Mrs., A tinsmith, Dec 28, p 44

N.

Nail puller, Star, Nov 23, p 38*
Nails, Durability of cut and wire, Aug 24, p 66; Sep 21, p 58
Nash ventilator, Sep 14, p 62
National Association of Master Plumbers, Oct 19, p 51; 26, p 37, 49
National Civic Federation, Dec 14, p 31; 21, p 27, 34
National draft regulator and radiator, Oct 26, p 42*
National Enameling & Stamping Company, Aug 17, p 44; Dec 7, p 33
National Founders' Association, Nov 23, p 52
National Hardware Association, Oct 5, p 38; 12, p 49; 19, p 44
National Retail Hardware Dealers' Association, July 27, p 39
National Supply Company, July 20, p 38
Natural gas in furnaces, Aug 3, p 37; 10, p 37, 40*; 24, p 47*
Neal & Brinker, Office rules, Sep 14, p 54
Negro, The, as a molder, July 6, p 32
Neubecker, William:
  Covering a conical tower with sheet metal, Nov 9, p 56*
  Sheet steel monuments, Nov 16, p 54*

New Century Washing Machine Company, July 13, p 43
New England, Trade conditions, Aug 31, p 50
New England Hardware Dealers' Association, Sep 21, p 46; Oct 19, p 44
New Haven Novelty Machine Company, Aug 24, p 51
New York City Stove, Range and Furnace Manufacturers' Association, July 13, p 40; Aug 17, p 41; Nov 30, p 31
New York Conference resolutions and National Association of Master Plumbers, Oct 26, p 37, 49
New York Master Plumbers' Association, Aug 31, p 51; Dec 21, p 39, 40
New York Radiator Company, Dec 21, p 39
New York Trade School, July 20, p 39; Oct 5, p 39; 12, p 43
  Day Cornice class, Nov 16, p 53*
  Lectures, Oct 12, p 59
  Opening of, Dec 14, p 42
New Zealand, Compulsory arbitration, Nov 9, p 37
Newark Master Plumbers' Association, Aug 24, p 51
Niagara Falls power development, Nov 23, p 56
Norfolk, Va., Retail Store and Sheet Metal Workers' Association, Aug 17, p 53*
Norwall Mfg. Company, Oct 5, p 47
November work in the hardware store, Nov 2, p 37
Nutmeg grater, Rotary, Oct 5, p 45*

O.

Obituaries:
  Adams, C. W., Sep 21, p 43; Ahern, James, Sep 28, p 55
  Blankemeyer, J. L., Oct 5, p 55; Booth, Lloyd, Aug 31, p 54; Britton, J. W., Nov 30, p 46
  Carney, Michael, Nov 2, p 51; Clark, J. D., Dec 7, p 41; Cory, D. U., July 20, p 34
  Dayton, H. J., Dec 7, p 43
  Fallon, Martin, Dec 7, p 41
  Gleason, E. P., Sep 28, p 56; Goodenough, C. W., Dec 21, p 32; Gordon, W. J., Nov 9, p 58.
  Huking, L. J., Dec 14, p 31
  Martin, S. D., Aug 3, p 42; McCarthy, A. J., Nov 2, p 51; McDermott, M. J., Nov 2, p 51; McHugh, T. J., Sep 7, p 45; Miller, J. L., Aug 24, p 43; Mills, J. F., Dec 7, p 30
  O'Crowley, R. J., Dec 14, p 44
  Read, J. M., Nov 9, p 43; Rodgers, William, Oct 19, p 57
  Lantry, J. J., Nov 2, p 51; Ledgwick, E. H., Sep 21, p 52; Shaddinger, W. M., Oct 5, p 40
  Walker, G. W., Oct 12, p 45
  Yates, Dent, Oct 19, p 53
Office rules of Neal & Brinker, Sep 14, p 54
Ohio law concerning air for school buildings, July 6, p 48
Oil fields of the West and Texas, Aug 10, p 54; Nov 2, p 63; 9, p 37; 16, p 36
Oil fuel, Apparatus for, Oct 12, p 44; Nov 2, p 58*
Oil fuel burners, Oct 12, p 62
Oil fuel in California, Oct 19, p 61
Oil stove trade, July 27, p 38; Oct 26, p 44
Osborn, J. M. & L. A., Company, July 13, p 52
Oster pipe threading machine, Nov 9, p 52*
Oven, Drying, Trouble with, Aug 31, p 55*; Sep 7, p 53; 21, p 57*

P.

Packing goods for export, Aug 10, p 37
Page, W. H., Boiler Company, Aug 3, p 46
Paint for galvanized iron, Nov 30, p 47; Dec 7, p 48; 14, p 46
Paint burner, Quick Meal, July 6, p 44*
Paint display, Nov 9, p 47*
Painting tin roofs, Sep 28, p 60
Pan-American Exposition, Oct 19, p 57; Nov 9, p 54
Pancoast International Ventilator Company, Aug 10, p 53
Parkersburg Iron & Steel Company, July 6, p 44
Patric Furnace Company, Oct 26, p 45*
Patterns:
  Allowing laps on patterns, Dec 21, p 44*
  Angles of special elbows, Sep 28, p 63*
  Apple corer, Dec 21, p 43*
  Elbow springing from pipe, Oct 26, p 55*
  Elliptical pipe and scalene cone, Intersection of, Nov 30, p 44*
  Envelope of scalene cone, July 27, p 50*
  Fluted bottom of circular bay, Nov 23, p 54*
  Fork, Oct 5, p 54*
  Funnel and spout, Dec 7, p 36*
  Pediment mitering on wash, Sep 21, p 48*
  Problem 218, July 13, p 38, 50*
  Ship ventilating cowl, Aug 17, p 51*
  Ship's ventilator, July 6, p 47*
  Transition piece from rectangular to round, Sep 7, p 53*
  Wash boiler cover, Dec 28, p 44*
Peck, Geo. W., Company, Aug 24, p 49
Peck Brothers & Co., Sep 28, p 55
Pediment mitering on wash, Sep 21, p 48*
Pelonze Scale & Mfg. Company, July 13, p 44
Peninsular Stove Company, Oct 5, p 44
Pennsylvania Retail Hardware Dealers' Association, Dec 21, p 33
Pennsylvania Stove Salesmen's Association, Dec 21, p 31
Perslan dwelling houses, July 20, p 50
Personality and human nature as elements of commercial success, Nov 16, p 42
Philadelphia Hardware Merchants' and Manufacturers' Association, Sep 21, p 46
Philadelphia Stove & Iron Foundry Company, Sep 21, p 44
Phillips & Clark Stove Company, Oct 5, p 40
Pierce, Butler & Pierce Mfg. Company, Aug 3, p 45; 31, p 48; Nov 2, p 51
Pig iron production, Oct 12, p 43; Nov 16, p 36; Dec 14, p 29
Pioneer Stove Company, July 6, p 34; Nov 30, p 34
Pipe:
  Destruction of street mains, Oct 26, p 37
  Furnace pipe, Discrepancy in proportioning, Dec 14, p 32
  Lead pipe destroyed, Sep 21, p 58; Oct 5, p 58
  Lead pipe of St. Paul's Cathedral, Oct 26, p 51
  Life of cast iron pipes, Dec 7, p 41
  Soil pipe roof connection, Dec 21, p 39*
  Soil pipes, Dec 28, p 40
  Spokane galvanized wire, Dec 21, p 39
  Stoppages in pipes, Dec 28, p 39
  Sweating of water pipe, July 27, p 55
  Tin lined and lead lined, July 20, p 44*
  Tin lined pipe for drinking water, July 13, p 45
  Wire wound cast iron, Aug 10, p 48
Pipe couplings, Bailey patent, Oct 19, p 52*
Pipe coverings:
  Asbestos air cell, Gast, Nov 16, p 48
  Tested by G. H. Barrus, Dec 14, p 44
Pipe threading machine, Oster, Nov 9, p 52*
Pipe tin in rolls, Nov 23, p 50
Pipe trade, Wrought iron, Oct 5, p 51
Piping:
  A freak, but it circulates, Nov 9, p 50*
  Hot water heating, Nov 2, p 58; 16, p 46*
  Returning condensation to boiler, Dec 28, p 47*
Pittsburgh Stove & Range Company, July 27, p 37; Aug 10, p 39; 31, p 43; Sep 7, p 41; 14, p 49
Pittsburgh Valve, Foundry & Construction Company, Nov 16, p 49
Plating steel with steel, Nov 30, p 47
Plumbers:
  Account of plumbers' time, Aug 24, p 60
  Dimensions for plumbers, Aug 3, p 46
  Education for plumbers, Oct 19, p 53
Plumbers' collection agency, Niagara Falls, Aug 24, p 51
Plumbing:
  Advanced plumbing, Aug 24, p 53; Oct 5, p 48
  Back air ventilating, Aug 3, p 54*; 24, p 61*
  Pitch pipe up to tank, Sep 14, p 62*
  Plumbing in the olden time, Nov 2, p 52
  Vacuum system, July 27, p 46*
Plumbing and Steam Supply League, Oct 5, p 51; 12, p 52; 19, p 54; 26, p 46; Nov 9, p 51; 16, p 45; 23, p 46; 30, p 40; Dec 7, p 43; 14, p 43; 21, p 40
Plumbing episode, Oct 19, p 52
Plumbing goods, Questions about, Dec 21, p 47
Plumbing regulations:
  Criticism of, by W. P. Gerhard, Oct 5, p 48
  Porto Rico, Nov 23, p 44
  Wilmington, Del., Aug 3, p 45
Plumbing situation, Dec 21, p 29
Plumbing trade:
  Australian trade, Dec 7, p 42
  Strained relations in the trade, Oct 26, p 37, 49; Nov 16, p 35, 45; 30, p 38
Polishes, Metal, Oct 19, p 60
Polishing machine, Besly, Nov 2, p 47*; 9, p 48*
Pope Tin Plate Company, Sep 7, p 49
Population, Growth of urban, July 20, p 31
Porto Rico, Plumbing regulations, Nov 23, p 44
Portsmouth Stove & Range Company, July 6, p 32
Postal scale, Star, July 13, p 44*
Presses:
  Bliss reducing, Oct 12, p 60*
  Largest drawing press, Oct 12, p 60
Price books, Removable leaf, July 27, p 41*
Prices:
  Close buying, Nov 23, p 33
  Guaranteeing prices, Dec. 28, p 27
  Plumbers' views on printing prices, Oct 5, p 47
  Prices and catastrophes, Sep 14, p 49
  Prices on the up grade, Aug 17, p 39
  Raw material, Oct 26, p 38
Prism glass, Cleveland, Aug 3, p 44*
Prizer-Painter Stove & Heater Company, July 6, p 37; 13, p 45
Problem 218, July 13, p 38, 50*
Profit sharing in England, Sep 7, p 38
Protection for jobbers of plumbers' supplies, Oct 5, p 51
Protector woven hose, July 20, p 38*
Pump cylinder, Location of, Sep 28, p 64*
Pumping water from distant location, Nov 2, p 58*
Pumps:
  Gould spray, Dec 28, p 32*
  Lift pumps with long suction pipe, Dec 7, p 48*; 14, p 46; 21, p 47; 28, p 48
  Steam pumps, Trouble with, Aug 31, p 56

Q.

Quincy Foundry & Novelty Company, Oct 12, p 47
Quincy Stove Mfg. Company, July 27, p 38

R.

Radiator valves, Oct 12, p 44
Radiators:
  Acme gas, Sep 7, p 42*
  Advance in prices, July 20, p 40

Radiators (continued):
Connection of radiators, Aug 10, p 55; 17, p 56*; 24, p 61; Sep 7, p 54*; 28, p 64*; Oct 12, p 63*
Heating from stove, Dec 21, p 48*
Imperial, Aug 31, p 46*
Jewel gas radiator, Aug 3, p 40
National draft regulator and radiator, Oct 26, p 42*
Size of radiators, Nov 9, p 59
Stove pipe radiator, July 6, p 33*
Tests of radiators with superheated steam, July 20, p 41
Rain water cut off, July 27, p 55
Rathbone, Sard & Co., "Acorn bread" contest, Dec 21, p 32
Reading Stove Works, Aug 24, p 45; Sep 14, p 50
Receipts for remittances, Dispensing with, Dec 28, p 46
Reese's soldered joint, July 13, p 49; 27, p 55
Reflectors for acetylene lighting, July 20, p 39
Refrigerators:
Challenge, Dec 14, p 35
Michigan Barrel Company, Dec 14, p 35
White enamel, Aug 10, p 48
Wilke glass lined, Sep 28, p 52*
Regulators:
Damper regulator, Morgan, Aug 31, p 47*
Wireton automatic, Aug 10, p 50*; Oct 19, p 42*
Reineke-Wilson Company, Sep 28, p 50
Reservoir, Making copper, Oct 26, p 59*
Resor, William, & Co., July 27, p 38; Aug 24, p 44
Retailer; his rights and his power, Aug 31, p 45
Richmond, E. W. T. "Business sketches in America," Aug 3, p 37
Ridgway & Tyler Company, July 13, p 45
Rietchel, H. Science of heating and ventilation, Oct 12, p 55
Ringen Stove Company, July 6, p 44; 20, p 36
Illuminating display, Nov 30, p 34
Rivet boxes, Nov 2, p 55*
Riveting machine, Hubbell, Dec 28, p 37*
Robinson Furnace Company, July 13, p 41
Rochester Furnace and Sheet Metal Association, Aug 24, p 49
Rochester Mechanics' Institute, Sep 14, p 58
Rock Island Stove Company, Aug 10, p 39
Rohrbacher, Allen & Jahant, July 20, p 36
Rolling Mill Company of America, Nov 2, p 56
Rolling mill machinery consolidation, Nov 16, p 55
Rolling sheet metal:
Demmler process, July 27, p 54; Nov 30, p 45
Donner process for black plate, Oct 19, p 58
Keefer and Cushwa process, Oct 26, p 57
Rollman Mfg. Company, Aug 17, p 45
Roof flanges, Making, Aug 3, p 53*
Roofing:
Calculation of slate roofing, Aug 10, p 54
Cork, asbestos and gravel ready, July 20, p 48*
Covering a conical tower with sheet metal, Nov 9, p 56*
Fastening corrugated iron roofing, Oct 19, p 62; 26, p 59*
Galvanized iron on the sea coast, Dec 14, p 47; 21, p 47; 28, p 48
Problem, July 6, p 48
Putting on standing seam roof, Sep 14, p 62
Reese's soldered joist, July 13, p 49*; 27, p 55; Dec 21, p 47
Roundhouses, Best roof for, Dec 14, p 47; 21, p 48
Sheet metal roofing, Nov 2, p 55
Roofing (continued):
Slate, Nov 9, p 55
Terne plate, Nov 9, p 55
Tile, Use of, abroad, Nov 23, p 50
Tin, Advantages of, Nov 23, p 49
Roofs:
Area of irregular shaped roof, Aug 10, p 55*
New tin roof over old one, Sep 21, p 58; Oct 12, p 62
Paint roof before it rusts, Aug 17, p 55
Painting tin roofs, Sep 28, p 60
Round Oak Year Book, Aug 24, p 44
Rubber buckets for chain pumps, Dec 7, p 42*
Rules and tables for heating work, Dec 14, p 33
Russell staple puller, Oct 19, p 45*
Russia, Sanitary and heating goods in, Dec 28, p 41
Russo side draft ventilator and automatic damper, Oct 19, p 59*
Rust removers, Nov 30, p 42
Rusted iron work, Cleaning, July 6, p 46

S.

Sad iron, Asbestos, Oct 12, p 50*
Salesman's reverie, A, Dec 21, p 31
Sanitary Enameling Company, Aug 17, p 46
Sap spouts:
Ideal, Nov 9, p 46*
Willis, Dec 21, p 34*
Scale in boilers, Removing, Nov 16, p 50
School buildings, Ohio law concerning air, July 6, p 48
School house heating, Sep 21, p 58*; Oct 5, p 58*; 12, p 62*; Nov 2, p 50
School of Commerce in New York, Dec 21, p 27
Schwab, R. J., & Sons Company, Aug 31, p 42
Scientific axioms, A challenge of, Dec 28, p 36
Searls Mfg. Company, Oct 26, p 47
Selling stoves, Sep 21, p 44
Sewer connections, Methods of making, Dec 14, p 46
Sharks in the building trade, Oct 19, p 51
Sharon Sheet Steel Company, Sep 7, p 49
Sharon Tin Plate Company's plant, July 6, p 44
Shawinigan Falls aluminum plant, Nov 2, p 46
Sheet metal, Scarcity of, Aug 24, p 42
Sheet metal interiors, Oct 5, p 56
Sheet metal work, Architectural, July 27, p 53; Oct 5, p 56
Sheet rolling, (See Rolling sheet metal)
Sheet steel monuments, Nov 16, p 54*
Sheridan Stove Mfg. Company, Aug 3, p 40
Sherman hose coupling, Oct 19, p 44*
Shingle, Adjustable stamped metal hip, Aug 10, p 53*
Shop and business management, Sep 14, p 47
Signs, Some characteristic, Dec 7, p 45*
Silver & Co., Brooklyn, Oct 26, p 51
Simpson Stove & Mfg. Company, Sep 28, p 49; Nov 16, p 38
Siphon in well, Aug 24, p 61; Sep 21, p 57*
Skylight and ventilator, Superior combination, Nov 2, p 56*
Skylight bars, Length of, Aug 31, p 55
Skylight lift, Bickelhaupt, Aug 24, p 58*
Slate:
Genesis of slate, July 27, p 59
Roofing slate, Nov 9, p 55
Sanitary uses for slate, Nov 2, p 53
Smith-Warren hollow metal window frames and sashes, July 27, p 52*
Smoke nuisance in Chicago, Dec 21, p 46
Smoke test for plumbing, July 13, p 45
Social element in business, Aug 17, p 39
Soil pipe roof connection, Dec 21, p 39*
Soil pipe situation, Nov 30, p 39
Soil pipes, Dec 28, p 40
Solders:
Aluminum solder, Sep 7, p 48
Brazing brass to copper, July 20, p 46
South Africa, American manufactures in, Sep 14, p 58
Southwestern Kansas and Oklahoma Implement and Hardware Dealers' Association, Dec 21, p 33
Specialty Mfg. Company, Oct 5, p 45*
Specifications, Unfair conditions of, Sep 14, p 56
Spiral Riveted Tube Company, Oct 19, p 60
Spire, Copper, Constructing, Aug 31, p 56*
Spokane galvanized wire pipe, Dec 21, p 39
Spoons, Measuring, July 6, p 36*
Spray pump, Gould, Dec 28, p 32*
Sprecher Bros., Oct 26, p 42
Springfield Furnace Company, Oct 19, p 41
St. George's Trade School, Oct 26, p 38, 53
St. Louis Exposition, Nov 9, p 48
St. Louis Master Plumbers' Association, Dec 28, p 41
St. Paul Roofing, Cornice & Ornament Company, Aug 3, p 50
Standard Sanitary Mfg. Company, Sep 28, p 56
Standardization of extra heavy flanges, Oct 12, p 54
Staple, Safety screw, Dec 28, p 46*
Staple pullers:
M. & M., July 13, p 43*
Russell, Oct 19, p 45*
Star Enameling & Stamping Company, Dec 7, p 33
Steam apparatus, Trouble with, Sep 7, p 48
Steam heaters. (See Boilers)
Steam pipe coverings tested by G. H. Barrus, Dec 14, p 44
Step ladder, Milbradt rolling, Aug 17, p 45*
Stevens, J. & E., Company, Oct 19, p 52
Stewart catalogues, Aug 17, p 41
Stolz, Frank D., Chicago, Aug 10, p 49
Stoppages in pipes, Dec 28, p 39
Stove manufacturers' steel plant proposed, Oct 12, p 46
Stove pipe radiator, Independent, July 6, p 33*
Stove polishes, July 13, p 41; Nov 16, p 51
Stove production statistics, Dec 14, p 33
Stove repairs, Aug 31, p 43; Sep 7, p 41
Stove repairs should be made readily, Dec 14, p 32
Stove trade:
Baltimore, Nov 2, p 42
Canada, Aug 31, p 42; Dec 21, p 30
Changes in the stove trade, Dec 7, p 27
Chicago paper makes discoveries, Aug 24, p 46
Eastern trade, Nov 23, p 36; 30, p 31; Dec 7, p 29
Effect of steel strike, Aug 24, p 46
Local associations and prices, July 27, p 37
Maintain prices, Aug 3, p 36
Midsummer trade, Aug 3, p 35
New York, Sep 14, p 49; Oct 26, p 42
Opportunity of cast iron heaters, Aug 3, p 35
Philadelphia, Sep 7, p 41; 28, p 48; Dec 28, p 29
Prices hardening, Sep 14, p 49
Reports for 1901, Nov 30, p 29
Salesman on the Eastern situation, Dec 21, p 29
Shorter credits in the stove business, Aug 10, p 37
Western trade, Aug 10, p 39; Sep 21, p 43; 28, p 48; Oct 12, p 45; Dec 14, p 31; 21, p 29
Stove troubles, Remedy for, Sep 21, p 43
Stoves:
Acetylene stoves and their application, July 6, p 31
American stoves in Europe, July 20, p 35

Stoves (continued):
Andes, Oct 5, p 40
Anthra Cinderella Oak, Sep 14, p 49
Art Garland, Sep 21, p 45
Beaver, Sep 7, p 43
Born steel ranges, Oct 26, p 42
Buck, Sep 14, p 52
Calhoun soft coal, Dec 14, p 33
Champion Monitor, July 27, p 38
Champion steel, Sep 14, p 50
Charm Crawford range, Aug 31, p 42*; Nov 9, p 43
Clover Triumph range, Sep 21, p 44*
Defiance range, New, Aug 3, p 39
Eclipse, Aug 10, p 45
Folding camp stove, Aug 3, p 39*
Garland Oak, July 20, p 34
Garland soft coal, Sep 14, p 51
Garland wood heaters, Oct 12, p 46
Gold Coin, Aug 3, p 39; 17, p 43
Highland Oak, Oct 12, p 46
Irving ranges, Aug 31, p 43
M & D, Sep 14, p 52
Model Grand range, Nov 23, p 36*
Model Oak, July 6, p 32
Monarch Cinderella, Sep 7, p 41
Monarch for 1902, Dec 14, p 33; 21, p 30
Monarch malleable ranges, Dec 28, p 31
Monogram, July 27, p 38
Norman steel range, Aug 3, p 39
Old cook stove, Gill, July 27, p 37
Quick Meal ranges, July 20, p 36
Red Cross, July 20, p 36
Regal Oak, Aug 3, p 38
Reineke-Wilson, Sep 28, p 50
Riverside, Aug 10, p 39
Round Oak, Aug 24, p 44
Royal, Aug 17, p 42
S stoves and ranges, Aug 3, p 40
Satisfaction range, Oct 26, p 43
Selling stoves, Sep 21, p 44
Simpson multiple action heater, Sep 28, p 49*
Sunshine, Aug 24, p 45; Sep 14, p 50
Thatcher ranges, July 20, p 35
Twentieth Century Range, July 13, p 40
Twin Burner, Aug 10, p 45
Universal, Sep 14, p 51
Victor stoves and ranges, Nov 2, p 43
Welcome, July 20, p 36; Aug 17, p 41
What Cheer wood heaters, Aug 10, p 39
White stoves and ranges, July 20, p 35
(See also Gas stoves)
Strikes:
An effort to abolish strikes, Dec 21, p 34
Gompers' advice, July 13, p 37
Sheet mill strike, July 6, p 29, 43; 13, p 53; 20, p 32, 49; 27, p 36, 49; Aug 3, p 50; 10, p 52; 17, p 54; 24, p 41, 57; 31, p 54; Sep 7, p 52; 14, p 47, 61; 21, p 42, 55; 28, p 45, 62
Terms of strike settlement, Sep 28, p 62
Western rolling mills, July 20, p 32
Sturges, Cornish & Burn Company, Aug 3, p 42
Superheated steam and tests of radiators, July 20, p 41
Superphosphate of lime, Dec 7, p 47
Sweating of wall, July 27, p 55
Sweating of water pipe, July 27, p 55
Syracuse Stove Works, July 20, p 36; Aug 17, p 41; Sep 14, p 49

T.

Tales from the Waldorf-Astoria, Sep 28, p 49
Lamps:
Formulas for gauge of metal in galvanized tanks, Oct 12, p 63
Lining lead tank, Aug 10, p 54
Setting horizontal hot water tank, Aug 17, p 56; 24, p 61
Tapes, Pocket linen, Aug 24, p 49*
Taplin Mfg. Company, Sep 28, p 53
Tar burner, Sep 14, p 57*
Tariff:
Australian tariff, Nov 16, p 37
Corrugated galvanized iron and steel duty, Nov 9, p 64
Tariff (continued):
Mexican tariff, Dec 7, p 52
Tea percolator, Harrington, Aug 24, p 48*
Technical education, Importance of, Nov 23, p 34
Telephone systems in private houses, Oct 5, p 57*
Tenement house improvement in New York, July 6, p 29; Sep 14, p 53
Terne coating, Nov 16, p 55
Terne plate roofing, Nov 9, p 55
Terne plates, Weights of, Nov 30, p 47
Terstegge, Gohmann & Co., Sep 21, p 43
Thanksgiving Day stove window, Nov 2, p 44*
Thatcher Furnace Company, July 13, p 46; 20, p 35; Aug 10, p 48; Oct 12, p 46
Thermometers and hot water pipes, Nov 9, p 52
Thermostatic draft regulators, Nov 23, p 46
Thomas & Smith, Chicago, July 6, p 38
Thomas White Stove Company, July 20, p 35
Thompson gas furnace, Oct 19, p 41*
Tierney, ex-President, Presentation to, Oct 19, p 51
Time book, Dec 21, p 38
Time card, Aug 24, p 60*
Tin, Famine in spot tin, Nov 30, p 43
Tinman, Passing of the old time, Nov 23, p 50
Tin mining in the Malay Peninsula, Aug 3, p 51
Tin plate:
Allis-Andrew process, Nov 30, p 45*
Charcoal and coke plates, Dec 7, p 28, 35
Tin plate coating machine, July 20, p 48
Tin plate production and the Amalgamated rules, Oct 5, p 55
Tin plate production in Pennsylvania, July 27, p 51
Tin plate scale, July 6, p 42; 20, p 47
Tin plate trade:
Imports and exports, Aug 3, p 50; Nov 9, p 57
Scarcity of tin plates, Aug 3, p 35
Tin scrap, Utilization of, Aug 3, p 51
Tinning old cans, Aug 3, p 54
Torch, Novel marine, July 13, p 60
Towel racks with glass bars, Nov 9, p 45*
Tower, Covering a conical with sheet metal, Nov 9, p 56*
Trade, Value of a, to young men, Nov 9, p 38
Trade conditions in Southern New England, Aug 31, p 50
Trade report, July 6, p 49; 13, p 57; 20, p 52; 27, p 56; Aug 3, p 55; 10, p 56; 17, p 57; 24, p 62; 31, p 57; Sep 7, p 55; 14, p 63; 21, p 59; 28, p 65; Oct 5, p 59; 12, p 64; 19, p 64; 26, p 61; Nov 2, p 60; 9, p 61; 16, p 60; 23, p 57; 30, p 48; Dec 7, p 49; 14, p 48; 21, p 49; 28, p 49
Transition piece from rectangular to round, Sep 7, p 53*
Trap regulations, Sep 7, p 53
Trap ventilation, Nov 23, p 43
Trapezium, Area of, Aug 10, p 55*
Trenton Potteries Company, July 13, p 47
Tubing, Benedict seamless, July 13, p 53
Tubular Heating & Ventilating Company, Aug 24, p 44
Tunnel, Park avenue, New York, Ventilation of, Nov 16, p 37
Turner Brass Works, Oct 12, p 50
Tuscora Steel Company, Dec 21, p 44
Twin Burner Vapor Stove Company, Aug 10, p 45

U.

United Engineering & Foundry Company, Nov 16, p 55
United States Steel Corporation:
Concentration of plants, Aug 24, p 59
Earnings, Oct 12, p 43
Universal Sanitary Mfg. Company, Oct 26, p 51
Urban population, Growth of, July 20, p 31
Utica Drop Forge & Tool Company, Oct 19, p 45

V.

Vacuum plumbing system, July 27, p 46*
Vacuum steam heating system, Morgan, Oct 12, p 53*
Valve light ventilator, Sep 28, p 60*
Valves:
Air valve, Royal, 1900, Aug 3, p 45*
Air valve for vacuum heating system, July 6, p 39*
Allen automatic valve, Oct 5, p 47*
Radiator valves, Oct 12, p 44
Remedy for singing valve, Nov 30, p 47
Vandergrift, a workingman's paradise, Aug 24, p 41; Nov 30, p 36
Vanderman's hood coupling, Dec 28, p 32*
Vanderman's roof connection for soil pipes, Dec 21, p 39*
Vapor Stove Manufacturers' Association, Aug 24, p 45
Vegetable masher, Victor, Oct 19, p 45*
Ventilation:
Cooling and warming of closed air spaces, Dec 28, p 38
Elementary school ventilation, Dec 7, p 40
Furnace work, Dec 28, p 30
Principles of ventilation, Oct 19, p 49
School buildings, July 6, p 48; Nov 2, p 50
Science of ventilation, Oct 12, p 55
Ventilators:
Pancoast, Aug 10, p 53
Pattern for ventilator, July 6, p 47*
Russo side draft, and automatic damper, Oct 19, p 59*
Size of ventilators, Nov 9, p 59
Valve light, Sep 28, p 60*
Window ventilator, Dec 14, p 35
Verses:
Hot air, Oct 5, p 49
Passing of the old time tinman, Nov 23, p 50
The Weary Drummer, Sep 21, p 55
Victor Stove Company, Nov 2, p 43
Vise, Emmert universal, Aug 24, p 50*
Volume of water in hot water heating apparatus, July 20, p 43*
Vulcan Club, Cleveland, July 6, p 34; 13, p 42

W.

Wages:
Molders' conference, July 6, p 46
Tin plate scale, July 6, p 42; 20, p 47; Nov 16, p 55
Wagner Mfg. Company, Oct 19, p 47
Walker, George W., Portrait, Oct 12, p 45*
Walker & Pratt Mfg. Company, Aug 24, p 44; 31, p 42; Oct 5, p 50
Washing machines:
Boss internal gear, Nov 9, p 46*
Boss rotary, Oct 26, p 47*
Chicago high speed rotary, July 13, p 43*
Ocean Wave, Nov 23, p 38*
Schroeder rotary, Nov 9, p 45*
Washington, D. C., Stove Dealers' Association, Oct 26, p 39
Water, Pure, Oct 19, p 61
Water closet construction, July 13, p 56
Water heaters:
American, Oct 5, p 48*
Bursting of heater, July 6, p 48*
Comfort, Aug 10, p 48*
Electric, Dec 7, p 41*
Jewel gas, Aug 24, p 52
Royal, Aug 31, p 47
Thatcher, July 13, p 46
Trouble with brass heater, Sep 28, p 64
Victor Instantaneous, July 13, p 47
Water heating, Sep 28, p 57
Water meter as a sanitary agent, Nov 9, p 49
Water tank, Automatic expansion, in water heating system, Nov 23, p 43

Water waste and its causes, Dec 28, p 41
Watts, T. P., to eat his hat, Nov 23, p 46
Waukesha Sheet Steel Company, Dec 7, p 34*
"Weary Drummer, The," Sep 21, p 55
Welding copper, July 6, p 46
Welding process, New, Aug 24, p 56
Wells, Carolyn, Verses by, Nov. 16, p 39
Western Association of Stove Manufacturers, July 13, p 39
Western Washington Hardware Association, Nov 30, p 35; Dec 7, p 31
What Cheer Stove Company, Aug 10, p 39
Wheeling Corrugating Company, Nov 23, p 50
White Enamel Refrigerator Company, Aug 10, p 48
Whitlock Coil Pipe Company, Oct 5, p 48
Wilke Mfg. Company, Sep 28, p 52
Wilkes-Barre Master Plumbers' Association, July 27, p 43
Wilmington, Del., Retail Stove Dealers' and Sheet Metal Workers' Association, Oct 5, p 46; 19, p 39
Window displays:
  Havana harbor, Dec 28, p 33*
  Hints, Dec 28, p 35
  "Keep cool" window, Aug 10, p 47*
  Knight in armof, Nov 23, p 39*
  Locomotive, July 6, p 36
  Paint display, Nov 9, p 47*
  Red man, Sep 14, p 54*
  Suggestions, Sep 7, p 40
  Thanksgiving stove, Nov 2, p 44*
  Tin cow, Sep 21, p 47*
Window frames, Fire proof, Aug 3, p 50
Window frames and sashes, Smith-Warren hollow metal, July 27, p 52*
Wiping cloths, Aug 31, p 46
Wire cutter, splicer and tightener, July 13, p 43*
Wire gauge, Griswold metric, Nov 2, p 59*
Wire glass, Fire test of, July 6, p 46
Wireless telegraphy, Dec 28, p 27
Wireton Heating Company, Aug 10, p 50; Oct 19, p 42
Wrench, T. & B. fruit jar, Nov 9, p 46*

Y.

Youngstown Iron, Sheet & Tube Company, Sep 14, p 59; Dec 21, p 44
Youngstown Iron & Steel Roofing Company, Sep 7, p 49; 14, p 59

Z.

Zinc, Cleaning of, July 13, p 54; 20, p 51; Aug 31, p 56
Zinc production of 1900, Oct 26, p 54
Zinc scrap, Nov 2, p 45
Zinc smelting corporation, Nov 23, p 51

Index to Reading Matter, Page 52.

Index to Advertisements, Pages 54 - 56

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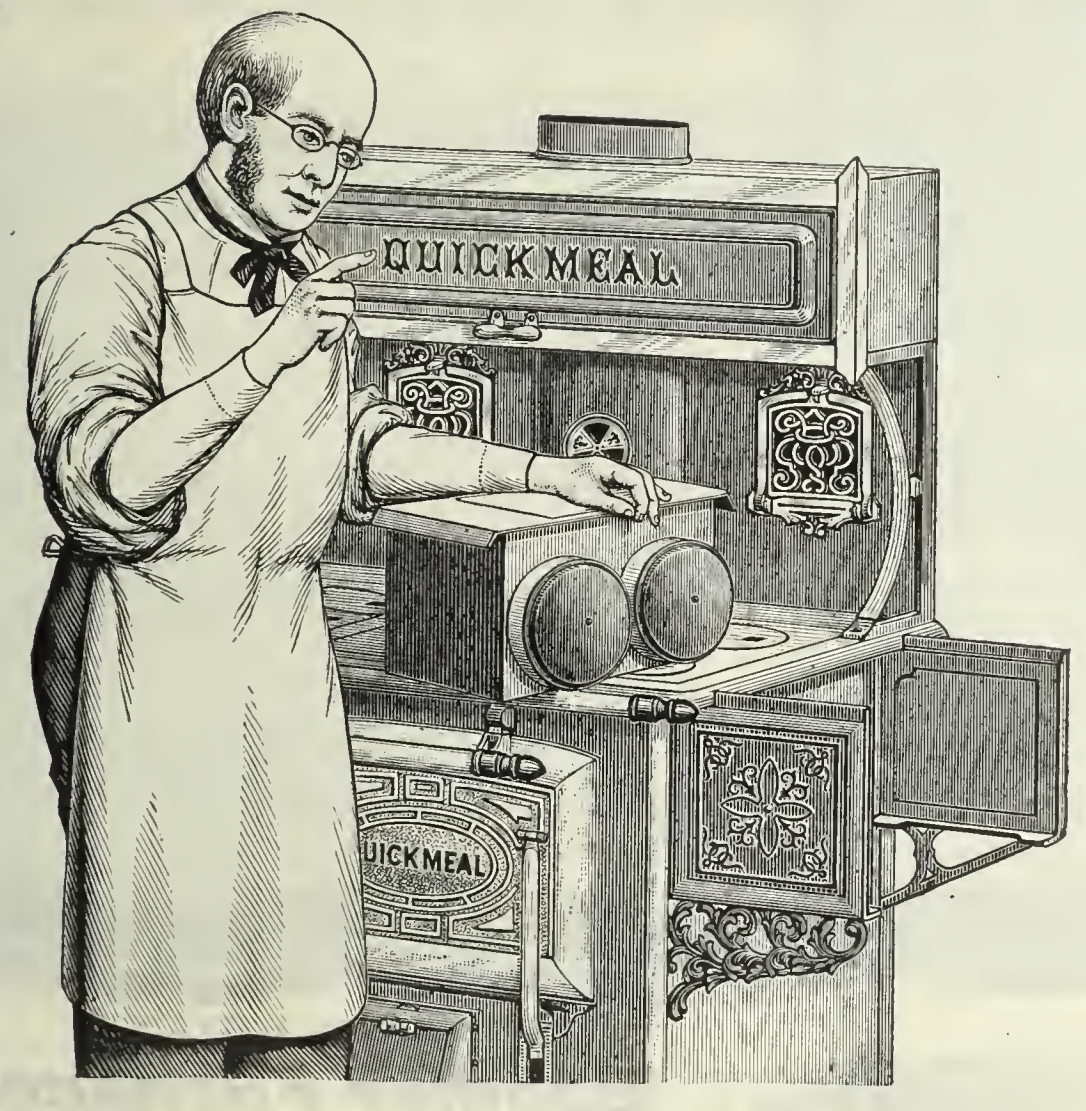

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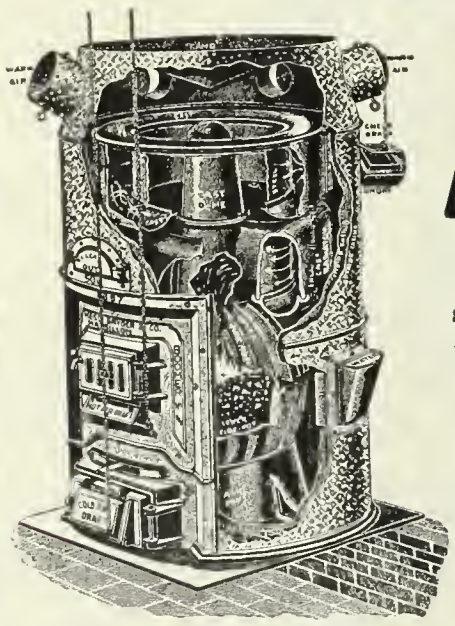

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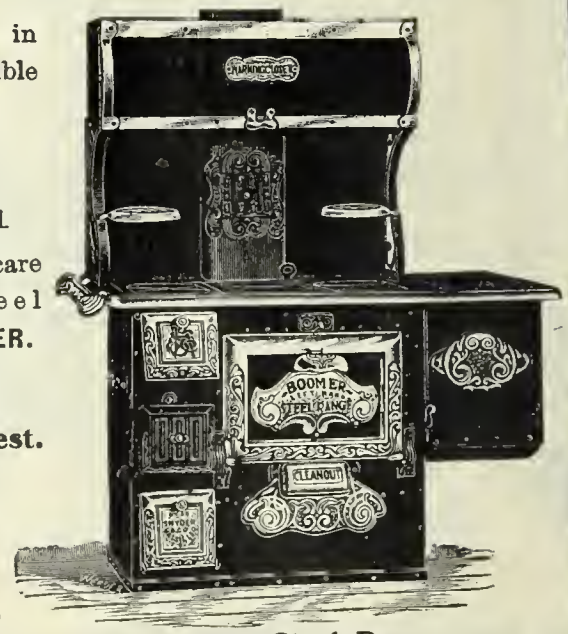

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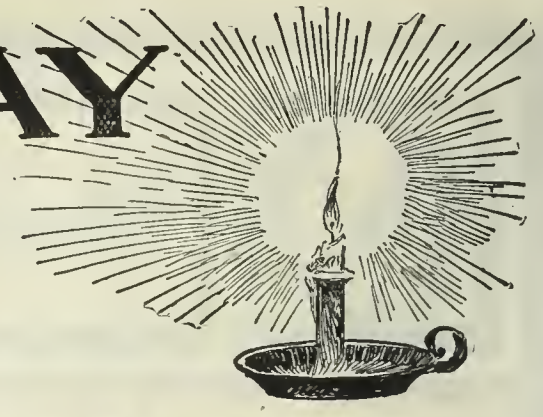

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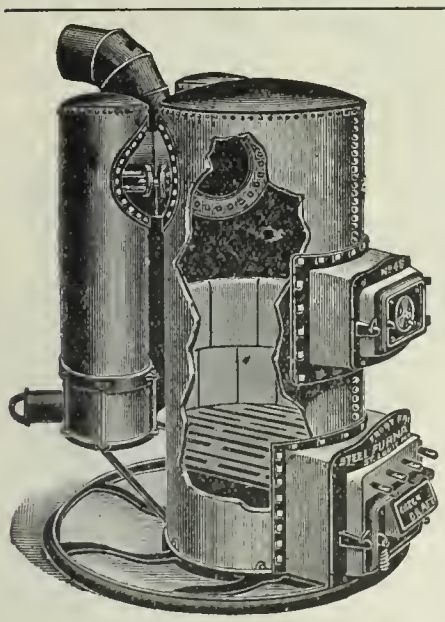

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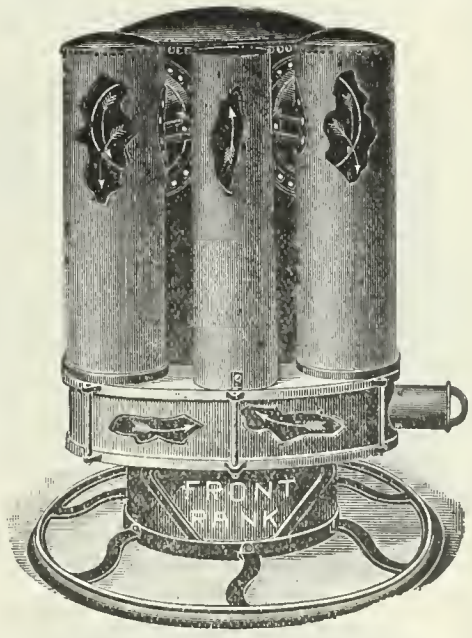
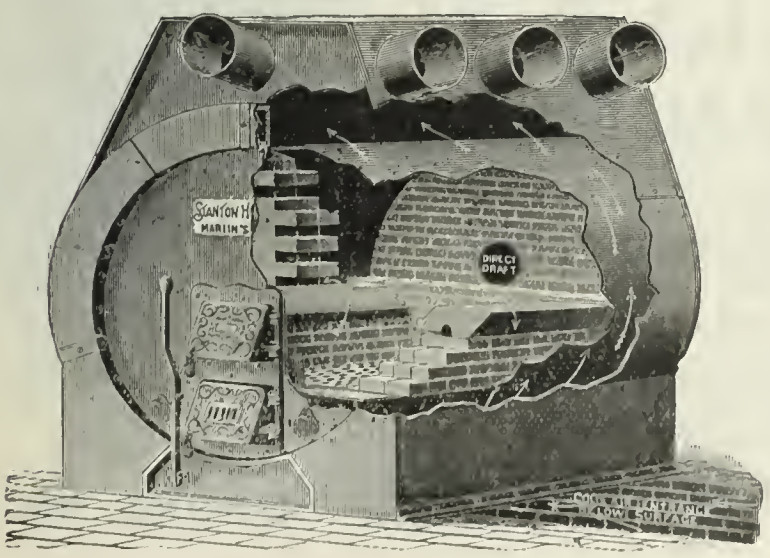


The Stanton Seamless Heater,

PORTABLE CASED.



LOUISVILLE, KY., Apl. 5th, 1901.

THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

Gentlemen:—Your favor of the 3d inst. is received asking our experience with the Stanton Heater which you put in for us during the fall of 1899. In reply we will say that it gives us pleasure to express our entire satisfaction with this Furnace. While we have had no severe weather this winter there have been several quite cold snaps, but our offices have been very comfortably heated, and our coal bill (Pittsburgh coal) has been quite moderate compared with other Heaters we have used.

The satisfaction the Heater has given us can be best expressed by saying that we have not heard the Furnace mentioned once this winter. You can see, therefore, that we have had absolutely no cause for complaint.

Yours very truly,
ROBINSON-HUGHES & CO

SEND FOR CATALOGUE.

THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

See our advertisement next week.

Royal Heaters.

MANUFACTURED BY THE

HART & CROUSE Co.

UTICA, N.Y.

ALL THE LEADING LINES OF

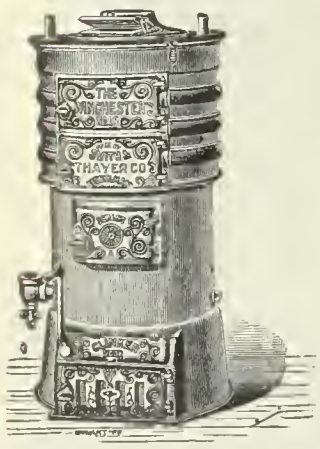
STEAM, HOT WATER & HOT AIR,

FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST., N.Y.
COLUMBUS, O.

BRANCHES.

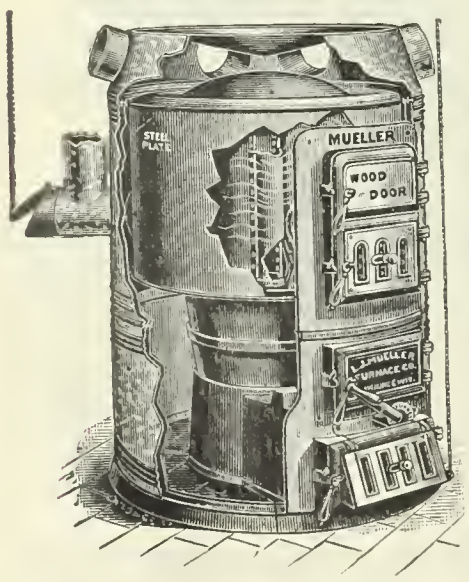
79 LAKE ST., CHICAGO.
ST. LOUIS.



WINCHESTER

How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.

HEATER.



44 YEARS' EXPERIENCE

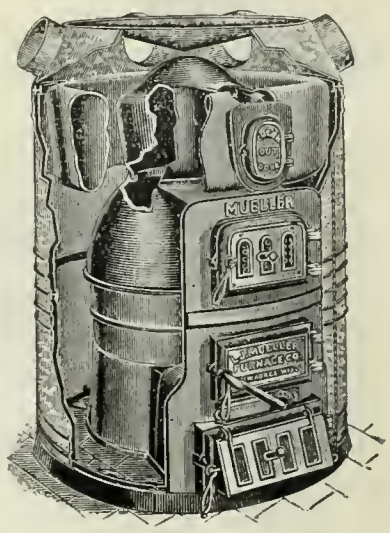
Is Embodied in

MUELLER FURNACES

Any Wonder they are the Most Satisfactory?

MADE IN ALL SIZES FOR ALL KINDS OF FUEL.

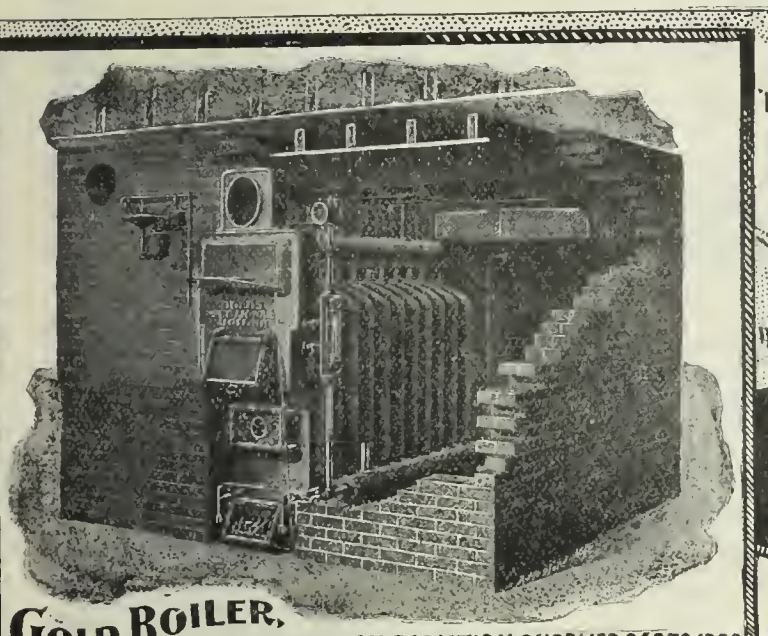
Write for 1901 Catalogue and Prices.
Get our Special Register Offer.



L. J. MUELLER FURNACE CO., 190 Reed Street, MILWAUKEE, WIS.

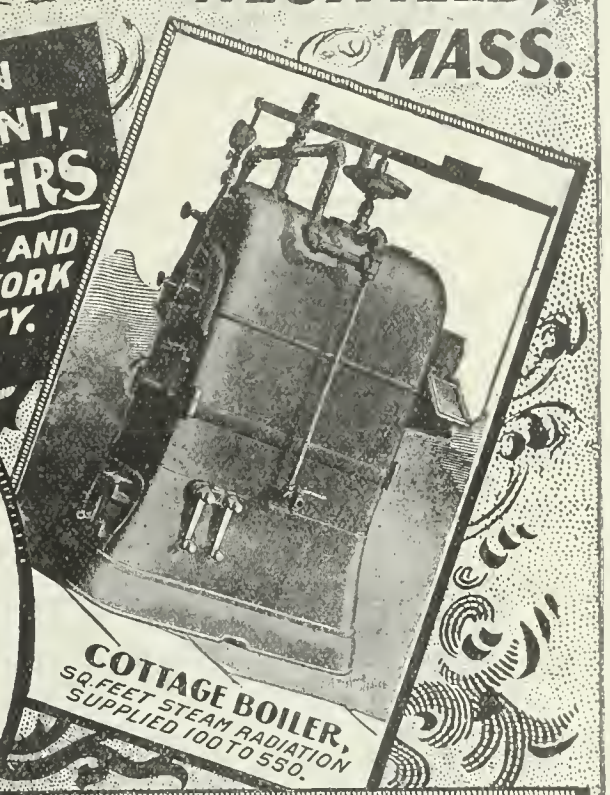
THE H.B. SMITH CO.

WESTFIELD, MASS.



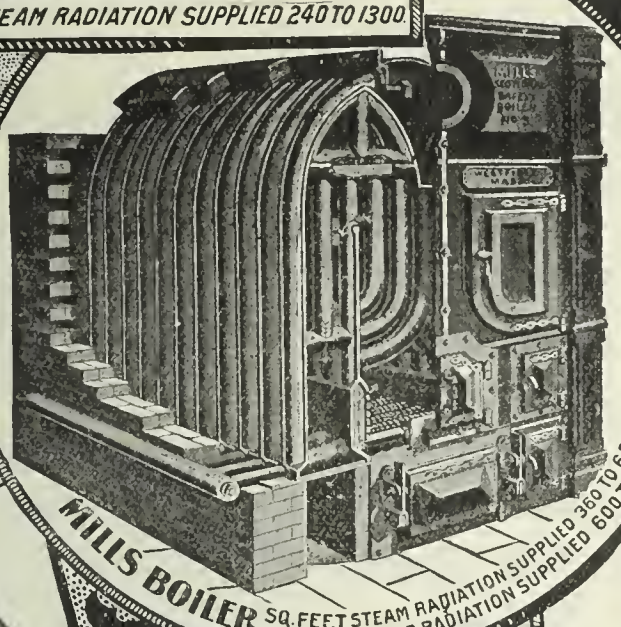
GOLD BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

EUROPEAN AGENT,
AUG. EGGERS
BREMEN AND NEW YORK CITY.

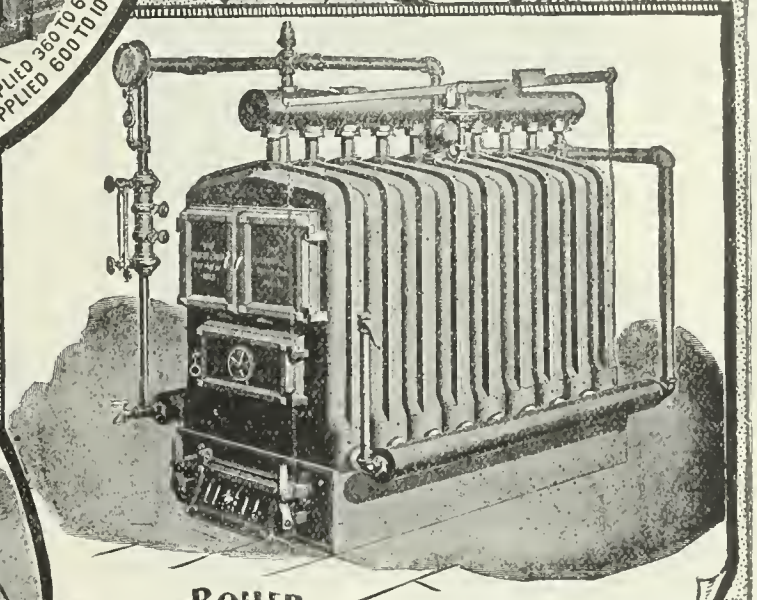


COTTAGE BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 100 TO 550.

PACIFIC COAST AGENTS,
DUGAN BROS.
SAN FRANCISCO CAL.

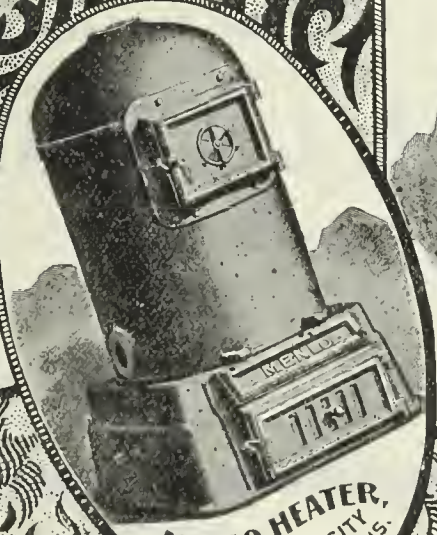


HILLS BOILER, SQ. FEET STEAM RADIATION SUPPLIED 360 TO 6250.
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.

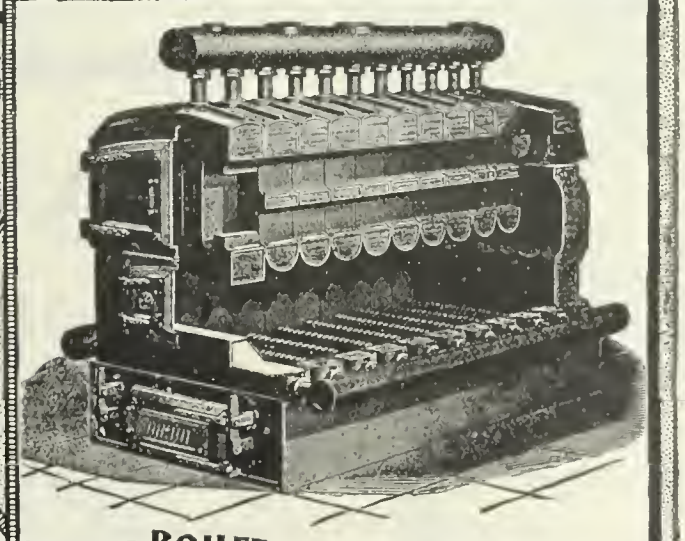
COTTAGE BOILER,
SQ. FEET WATER RADIATION SUPPLIED 150 TO 1000.



MENLO HEATER,
TANK CAPACITY 100 TO 180 GALLONS.

Western Agents
WESTERN BRASS MFG CO.
ST. LOUIS, MO.

SALESROOMS:
133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.



MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.

A TWENTY inch pot **"DIGHTON"** Furnace has a radiator 30 inches in diameter, 27 inches high.

The indirect flue plates extend from either side of feed door around to smoke outlet.

Nine-tenths of all surface is ***Bright, Direct Heating Surface.***

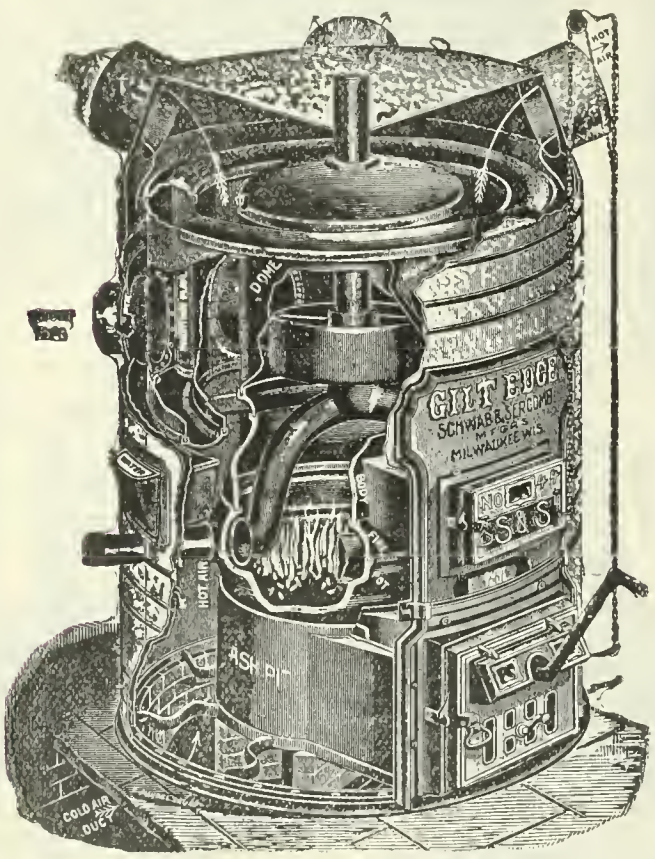
This is only one of many good reasons ***why*** a "DIGHTON" does more heating with less fuel than other Furnaces.

Test a "**DIGHTON**" somewhere that you can ***compare results*** with some other Furnace, no matter if the other radiator has an acre of dark indirect flue surface.

Some dealers now make a regular practice of figuring a 20 inch pot "**DIGHTON**" where their competitors figure some other 22 inch pot Furnace.

They could not afford to run chances doing so if they had not already proved the capacity of the "**DIGHTON.**"

DIGHTON FURNACE CO., TAUNTON, MASS.



UTILIZED radiating surface, that is economy Sectional fire pots from 1 in. to 2 in. thick and other parts in proportion, that is durability. Positive gas-tight joints, that is necessary to health. These, with all other improvements for ease of management, are combined in the Gilt Edge Furnaces. They are made for all kinds of fuel, and are the very best.

Write for Catalogue and Prices to

R. J. SCHWAB & SONS CO.,

Mfrs.,

MILWAUKEE, WIS.

E. E. DUNNING, Mgr. Furnace Dept.

What is Home without THE HAXTUN

The Leading Boiler for 25 years

STEAM OR WATER

Send for New Catalogue.

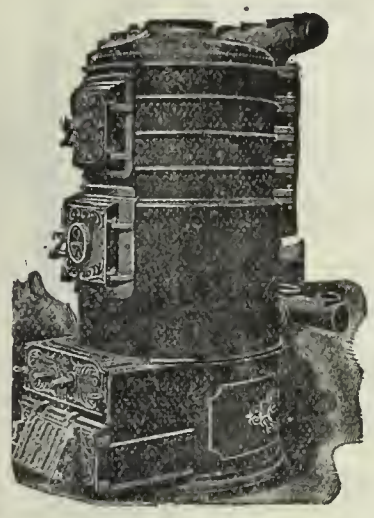
Chicago Store, 169 E. Lake St.

ALL STEEL

KEWANEE BOILER COMPANY.

MAIN OFFICE AND FACTORY

KEWANEE, ILLINOIS.



PERSISTENCY.

It was Josh Billings who declared that "if a man saved only a cent a year, it was merely a question of time when he would become a millionaire." You may smile at the remark, but at the same time you must recognize the element of persistency which it contains.

Now that same element is behind every effort made in behalf of

GURNEY HEATERS

"Bright Idea," "400 Series" and "Doric."

It was persistency that made their present excellence possible. It was persistency that secured their present recognition. It shall be persistency which will broaden their already extensive success.

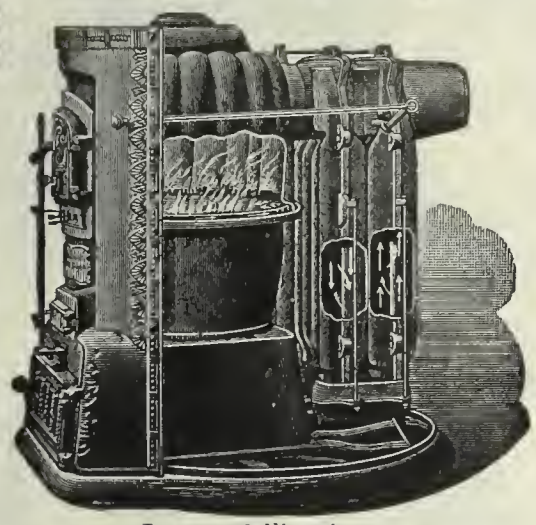
We've a lot of good agents now, but we want more. Better become our agent right away so that these advantages may bring money into your cash drawer.

Our latest trade catalogue, which we will gladly send as soon as you ask for it, contains the whole story. Your address please?

Gurney Heater Mfg. Co., 74 FRANKLIN ST., BOSTON.
111 FIFTH AVE., NEW YORK CITY.

Western Selling Agents, JAS. B. CLOW & SONS, - - - 222 to 224 Lake St., CHICAGO, ILL.

BENGAL FURNACES



Leaders of Their Class.

EASY TO SELL. SURE TO PLEASE.

Adapted to all kinds of cellars.

3,500 square feet of radiating surface—more than any other furnace their size.

ALL CAST IRON.

BENGALS HEAT THE HOUSE, NOT THE CHIMNEY.

Secure a BENGAL AGENCY at once.

CATALOGUE AND FULL INFORMATION ON REQUEST.

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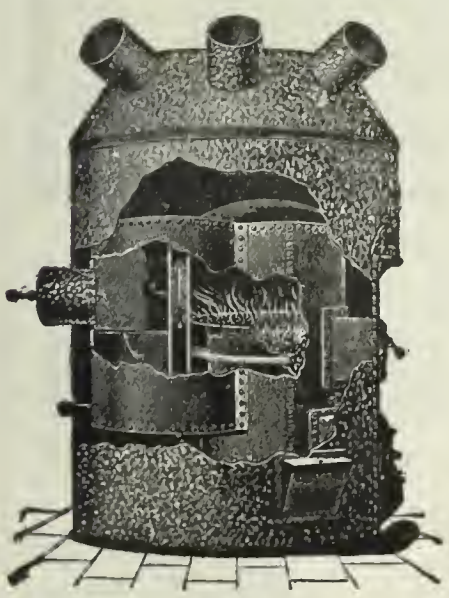
Washington, Hanover & Elm Sts.,
Boston, Mass.

FLOYD, WELLS & CO.,
ROYERSFORD, PA.



WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

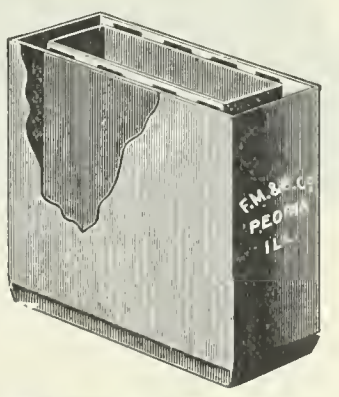
Absolutely gas and dust tight. A great heat producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

SEND FOR CATALOGUE PEORIA, ILLS.



"The Handy Furnace Pipe."

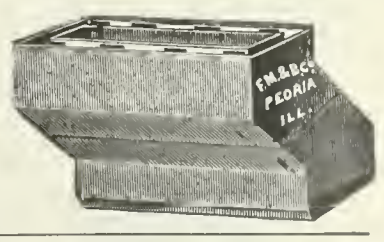
MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,

SEND FOR CATALOGUE. PEORIA, ILLS.



BRAND STOVE CO.

STOVES, RANGES and FURNACES.

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MILWAUKEE, WIS.

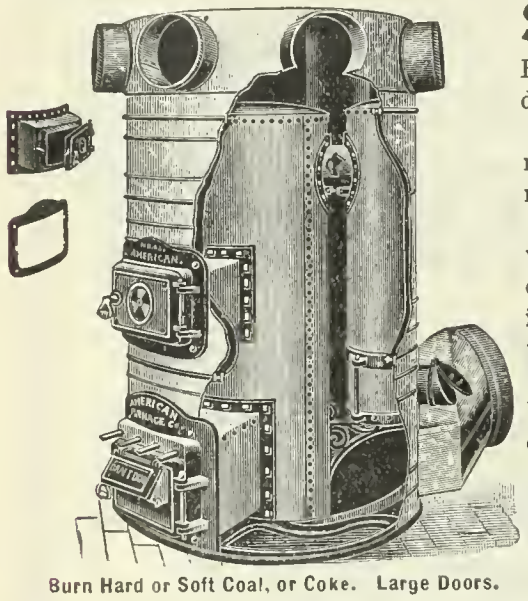
JEWEL STOVES AND RANGES..

A Complete, Well Advertised Line; Low Prices and Good Workmanship.

Please Write for Catalogue.

DETROIT STOVE WORKS.

Detroit - Chicago.



Burn Hard or Soft Coal, or Coke. Large Doors.

Some Ripe Experience

Has come to us through watching the doings of dealers throughout the United States.

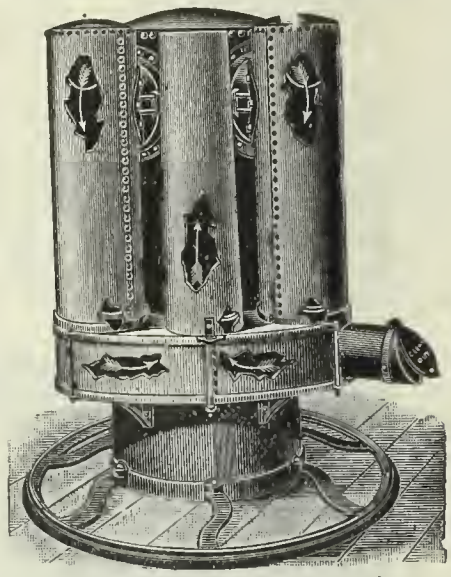
We find that the dealer who sells cheap furnaces not only loses ground in the furnace business but also has a falling off in his other lines.

On the other hand we can say that the man who sells a good furnace and charges enough to do a good job will, in a few years, be the leading furnace man in his town and at the same time build up his other business.

The ***American Furnace*** is made for the better class of trade; is durable, clean and economical in fuel.

The American Furnace Co.,

1911-13 PINE STREET, ST. LOUIS, MO.



Large Radiators, easy to clean out.

Write for prices and secure the agency before the other fellow gets it

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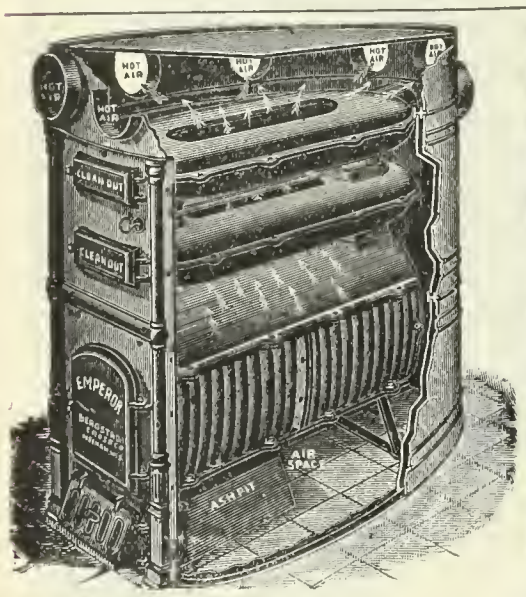

Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing.

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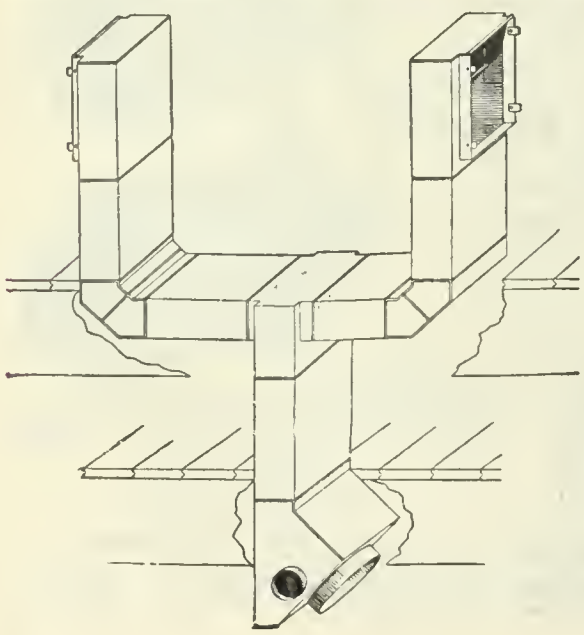
Bergstrom Bros Co.

NEENAH, WIS.



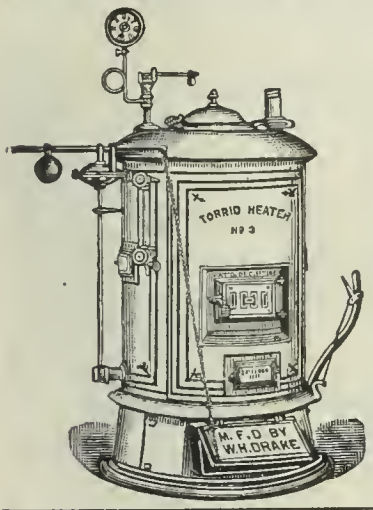
It's To Your Interest

to keep in touch with the prices now ruling on Hot Air wall Pipes. WE MAKE THEM and can tell you about it, if you'll counsel with us a little. Our catalogue and price-list can be had for the asking and may save you dollars.

Safety Furnace Pipe Co.,

Nos. 11 and 13 East Atwater St., Detroit, Mich.

"TORRID HEATER."
FOR STEAM OR HOT WATER



It is Practical in Design.
It is Safe, Being Tested to 200 Pounds.
It is Easy to Manage and Keep Clean.
It is Durable.
It is Sectional and Easily Handled.
It has No Packed Joints.
It is Self-Feed or Surface Burning.
It has the Torrid Patent Rocking and Dumping Grate.
It is Low in Price.

SEND FOR CATALOGUE.

MANUFACTURED BY

W. H. DRAKE, No. 36 Clinton St., NEWARK, N. J.

Factory: Hackettstown, N. J.

KINEO FURNACES
FOR WOOD.

The Kineo Furnaces are built to secure durability and heating qualities. The smoke enters the radiators on the back and passes entirely around the radiator before entering the chimney, making them the most powerful heaters known. Also manufactured in two sizes with steel radiators.

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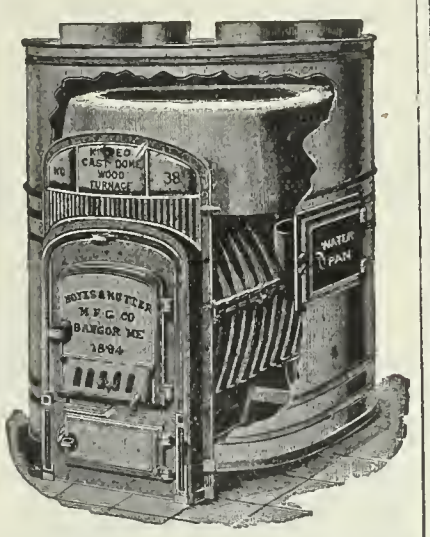
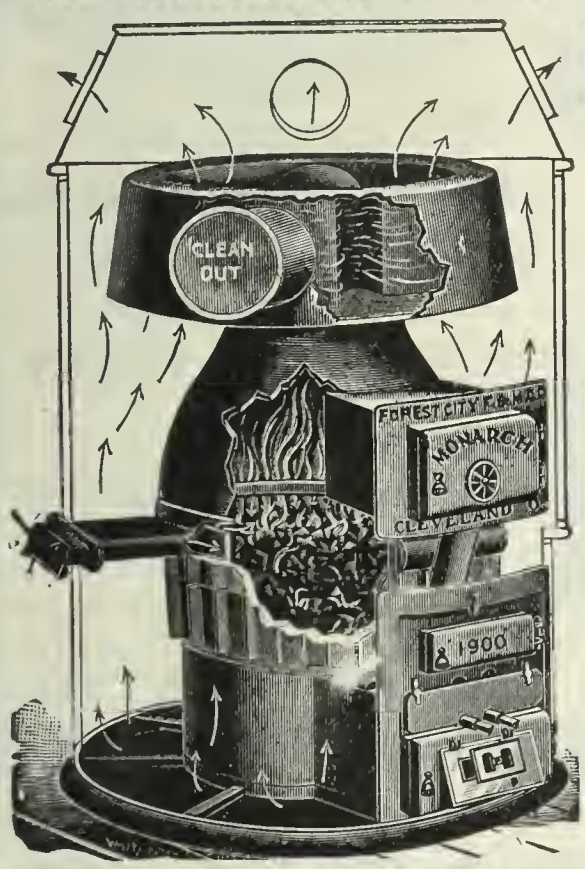


Noyes & Nutter Mfg. Co.,
BANGOR, MAINE.



MONARCH FURNACES.

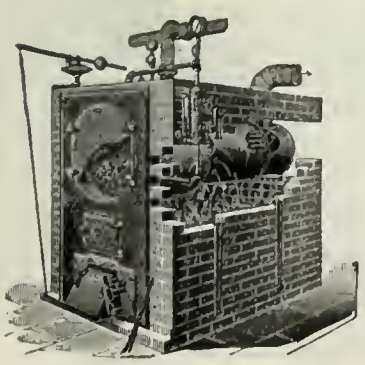
All Cast Iron. For Hard and Soft Coal. At Foundry Prices to Large Buyers.

Inquiries Solicited.

OUR NEW CATALOGUE JUST OUT.

The Forest City Foundry and Mfg. Co.
81 Elm Street,
CLEVELAND, OHIO.

Gray Iron Castings to order. High grade only.



Vance Boilers.

The most economical Steam and hot Water Boiler on the market. Write for Catalogue and Price List.

VANCE BOILER WORKS,
373 Atkinson St., Geneva, N. Y.

HOT WATER AND HOT AIR

HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

The Champion
Hot Water Combination Boilers

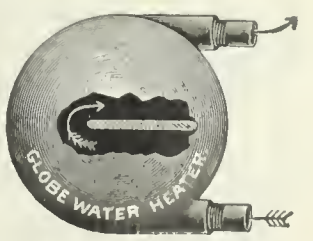
THEY FIT ANY FURNACE.

These Boilers are made in three sizes diameter, and from 100 to 600 square feet radiation capacity.

Will heat those cold rooms, or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work

GLOBE WATER HEATER

Attached to any Furnace will heat water for domestic use.

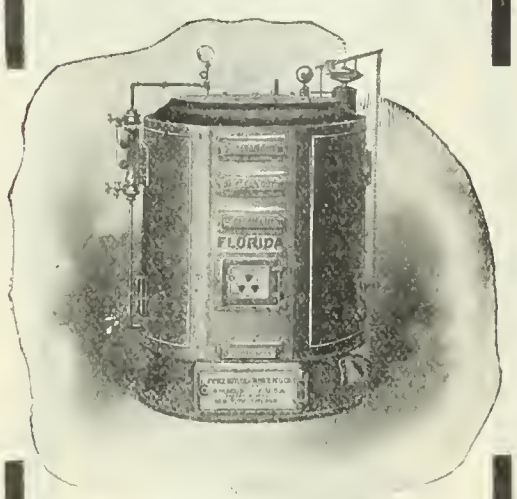


Write for new circular. Manufactured by

FRANK D. STOLZ,
115 Lake St. - - Chicago, Ill.

Pierce Boilers Perfect Burners

For Steam and Water Heating.



Florida Steam Boiler.

Pierce Steam and Water Boilers are unequaled for economy of fuel consumption, combined with large heating capacity.

GREATEST VARIETY OF SIZES AND STYLES.

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46-48 E. 20th St.	50 Oliver St.	24 So. 7th St.

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES

HOT-AIR AND COMBINATION AIR AND WATER FURNACES

LAUNDRY STOVES CONFECTIONERS' STOVES

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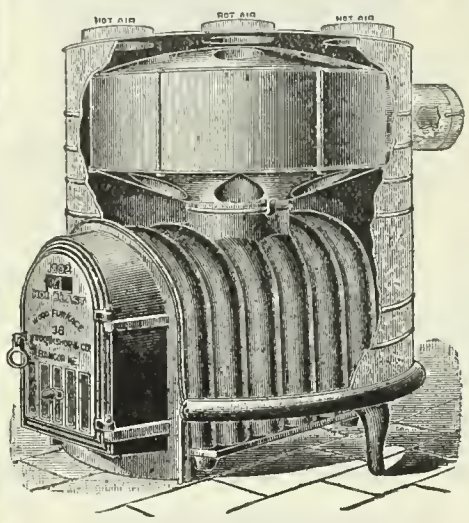
STAMFORD CONN

WOOD FURNACES.



THE HOT BLAST.

Established 1839. Incorporated 1894.

OUR IMPROVED MONITOR.

The most powerful heater made.

2 SIZES, PORTABLE OR BRICK SET.

No. 38 for 3 ft. wood. No. 50 for 4 ft. wood.

OUR LOW PRICED HOT BLAST.

The most practical, durable heater on the market at anywhere near its cost.

FIRE BOX BODY made in one piece, corrugated, is very heavy and cannot break or warp.

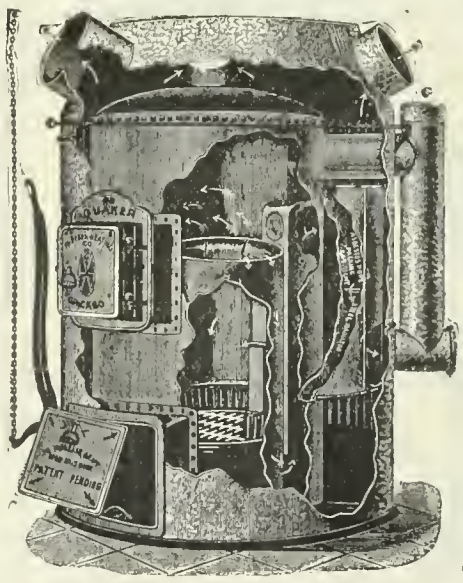
RADIATOR with heavy cast iron heads, heavy plate iron shell and hot air flues, has extra large radiating surface and is self cleaning. Every part of radiating surface is directly exposed to fire, allowing no possibility of creosote in the apparatus. No wood grate. Fuel burns on the ashes in the only practical, economical way.

3 SIZES, PORTABLE OR BRICK SET.

Nos. 36, 42 and 48, for 3, 3½ and 4 ft. wood.

Thousands in use in all sections of the country. Testimonials and full particulars sent on application to the manufacturers.

WOOD & BISHOP CO., BANGOR, MAINE.



The THREE requirements for a first-class furnace are ALL Incorporated In the

NEW QUAKER FURNACE

Viz.:

ECONOMY in FUEL.

ECONOMY in TIME spent in caring for the fire, and

ECONOMY in REPAIRS.

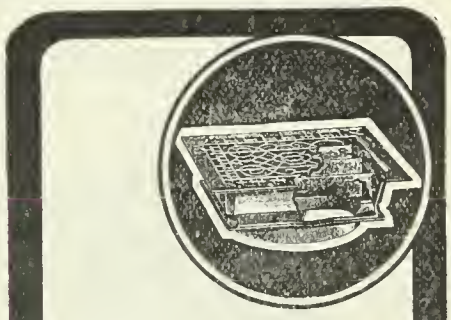
Drop us a postal and we will tell you all about it.

WIRETON HEATING CO.,

Main Office and Works,

BLUE ISLAND, ILL.

Chicago Office, 40 Dearborn St.



BETTER THAN TIN

is the Independent Iron Register Box. There is economy in its use because its cost is but half that of tin. More serviceable too. Will not rust or wrinkle or allow air to escape outside of the register when valves are closed.

Independent Register Co.,

CLEVELAND, O.

SHINES FOR ALL

It is the polishers' friend, and will polish anything. Write for free sample to 297 E. Washington St., Ind'p'l's, Ind.

GEO. W. HOFFMAN

BUTLER STEEL FURNACE

The cheapest and best heating furnace on the market.

This furnace is a fuel saver and will not clog with soot.

You can burn slack, wood or any kind of soft coal.

For further information and prices write to

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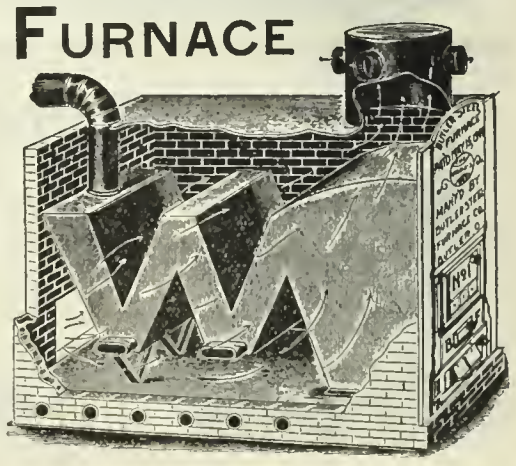

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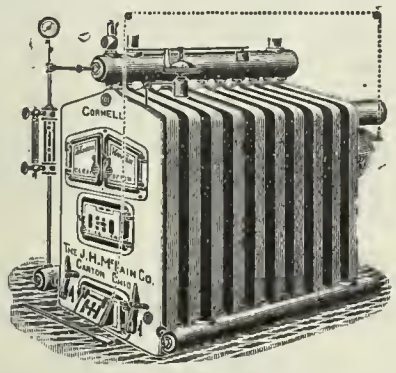

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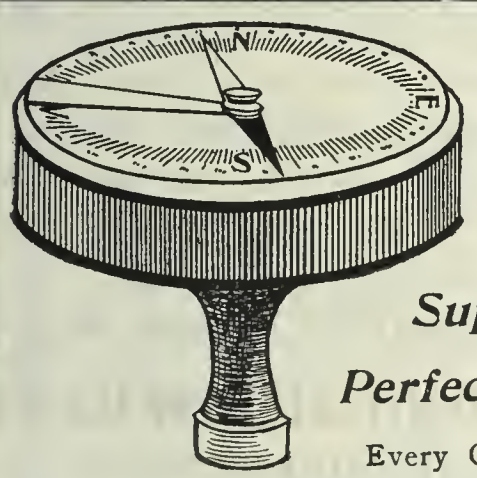

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Chapter I.—Furnaces—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

Chapter II.—House Heating—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

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Chapter VII.—Fan-Furnace Combination System—Is devoted to Positive Warm Currents from Fan Systems—Location of Fan and Driving Apparatus—How Good Furnaces are Aided by Fans—Types and Efficiency of Fans—Area of Ducts and Flues, etc.

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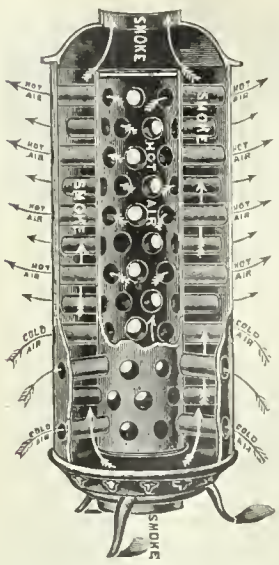

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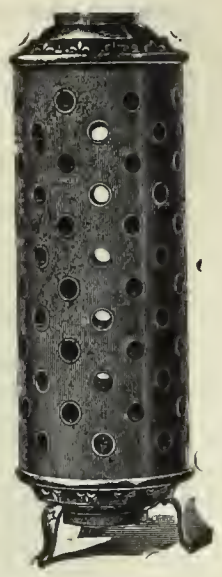

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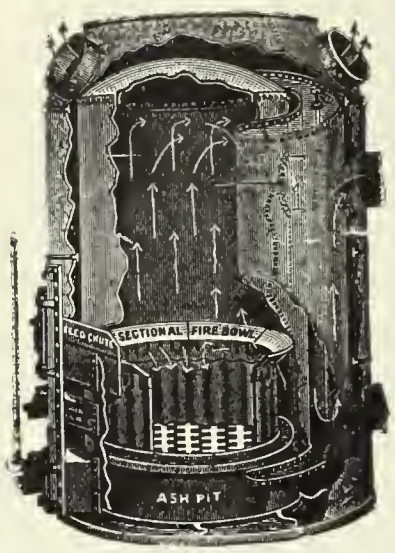

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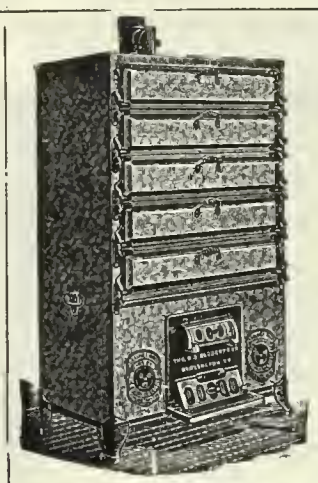

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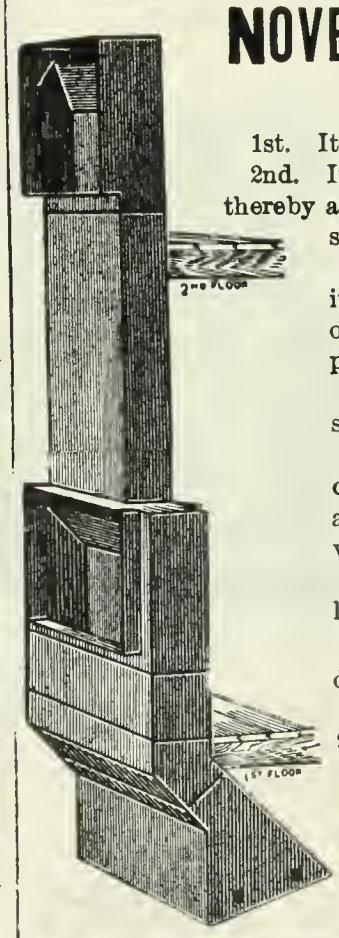

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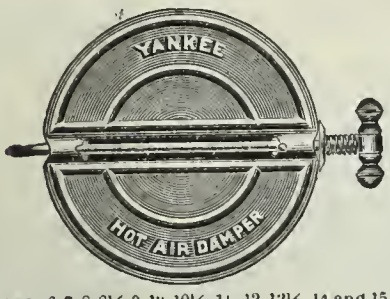

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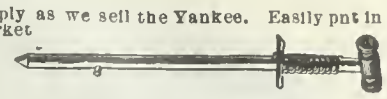

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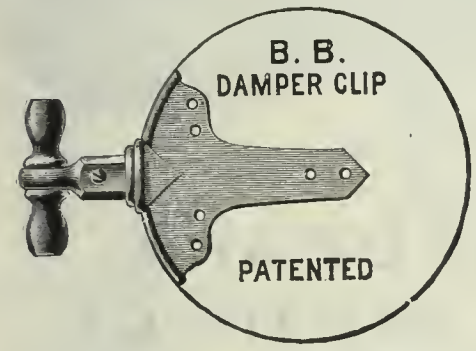

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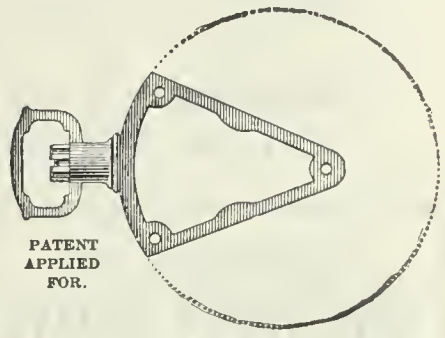

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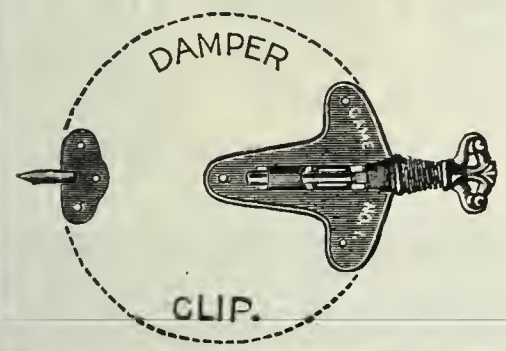

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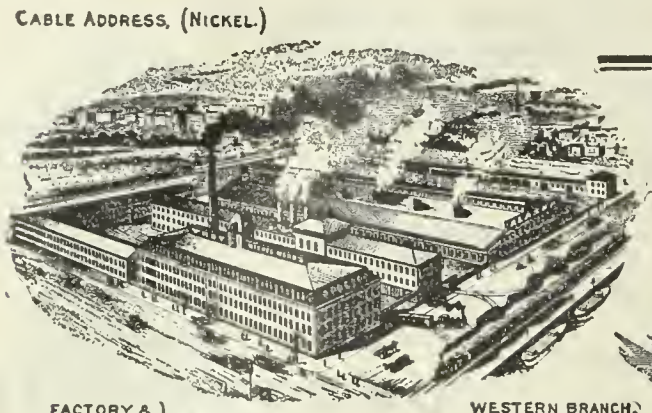

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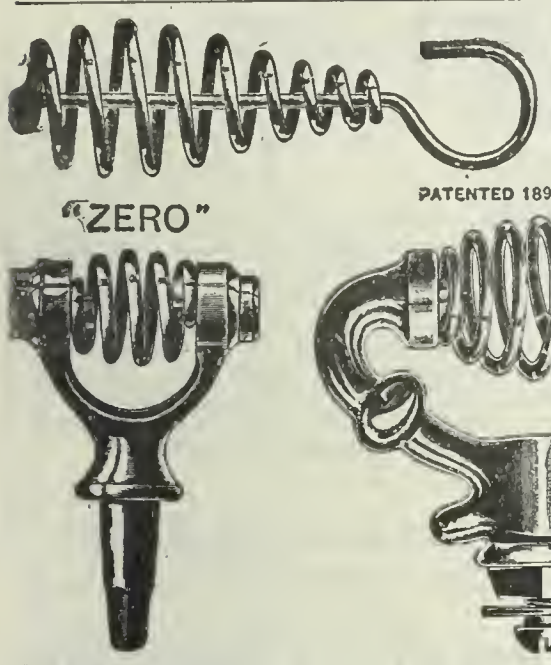

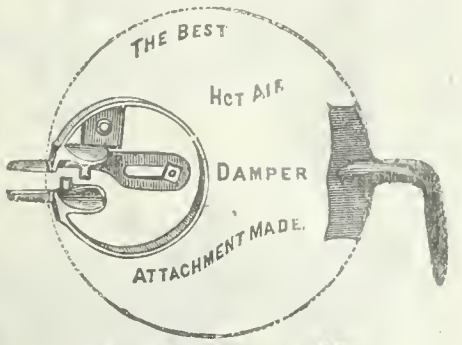

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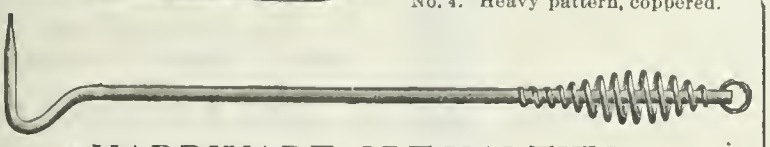

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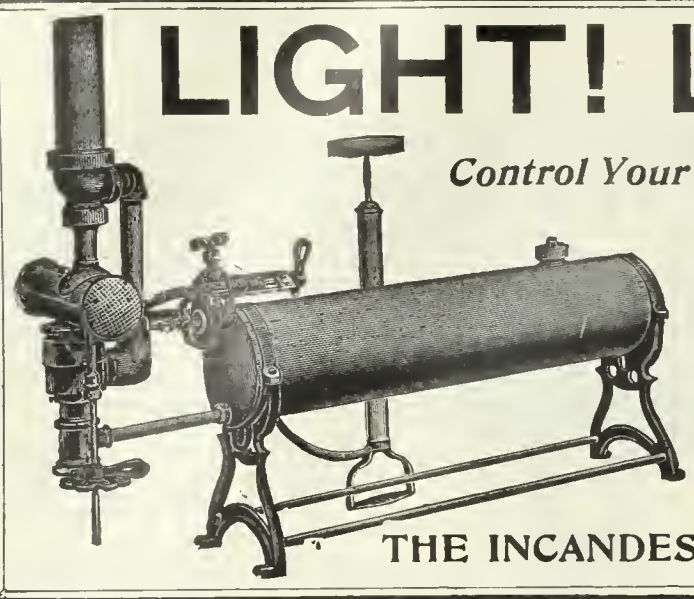

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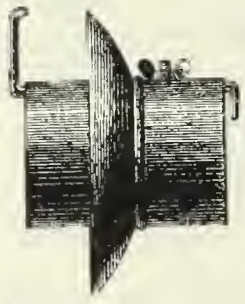

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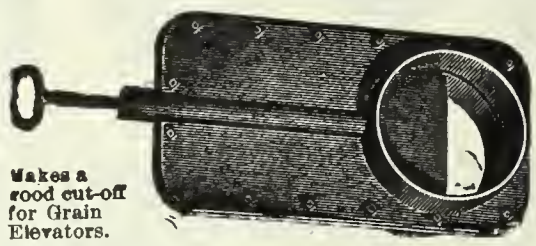

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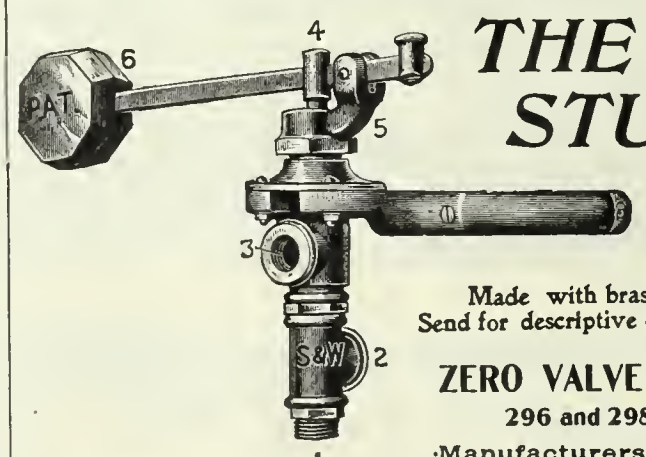

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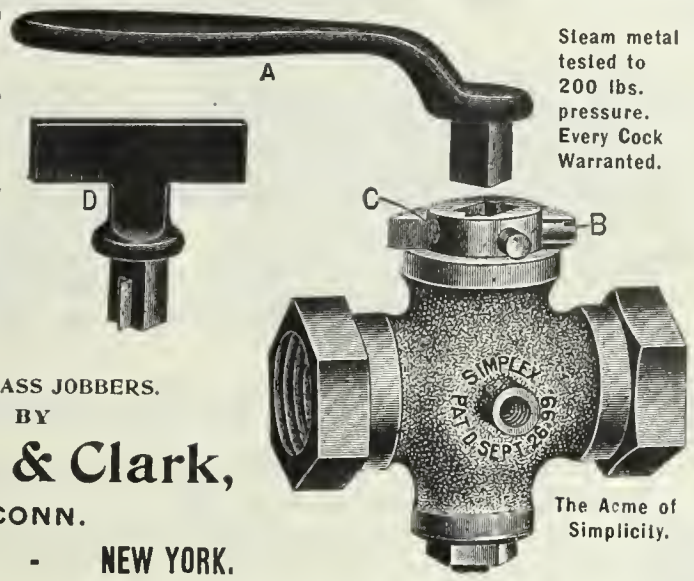

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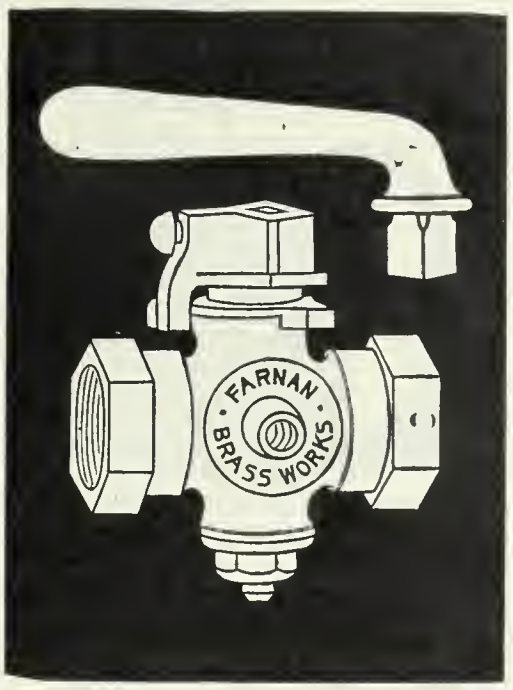

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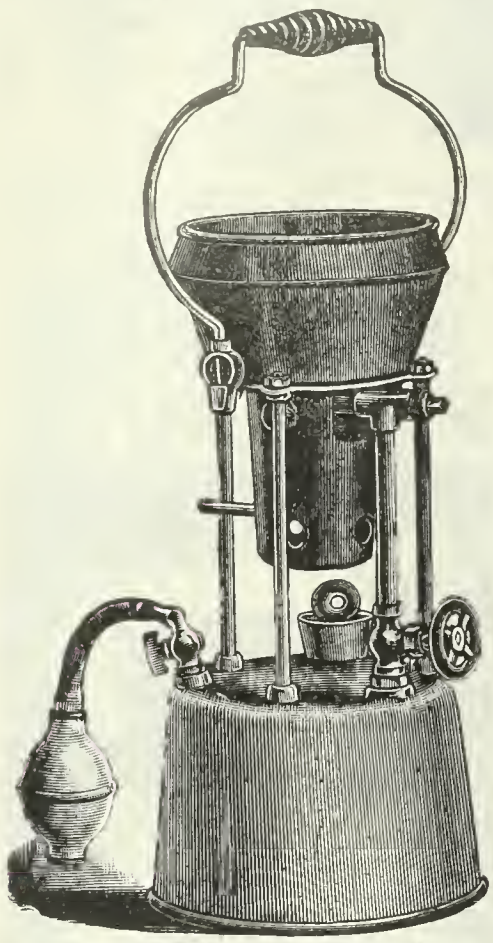

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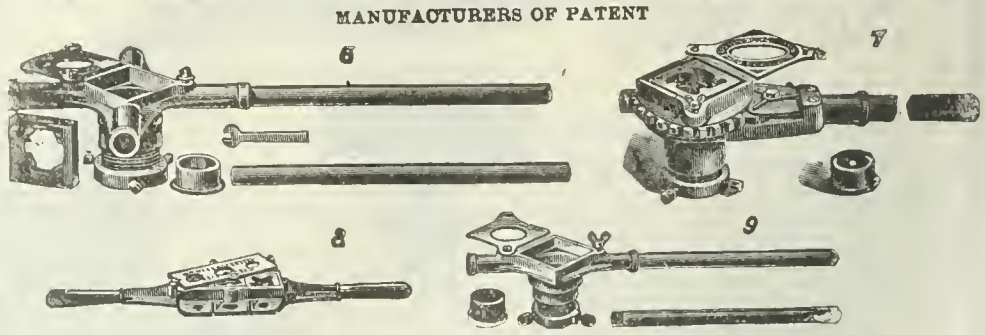

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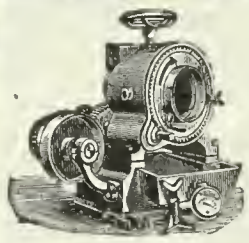

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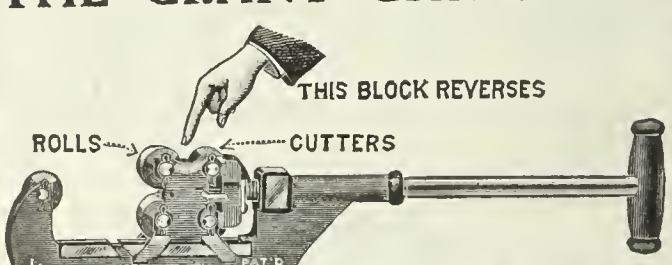

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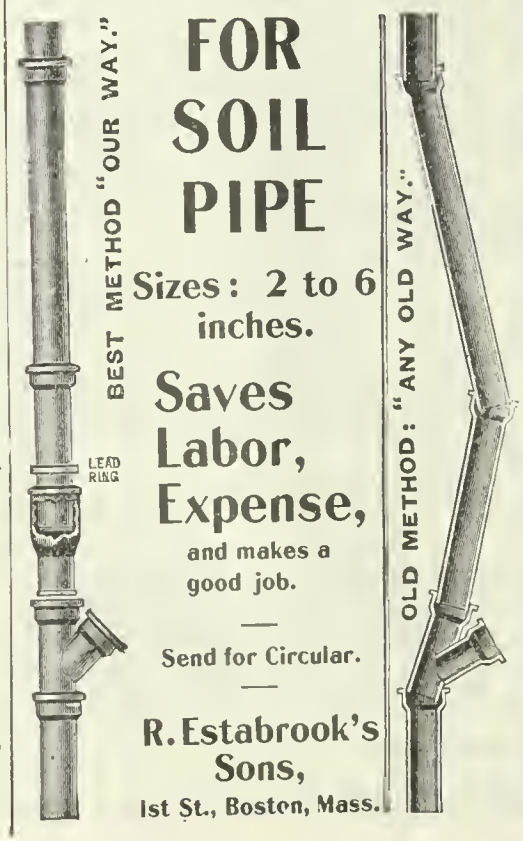

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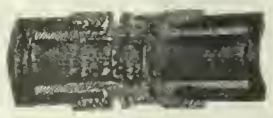

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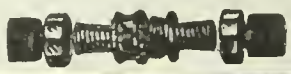

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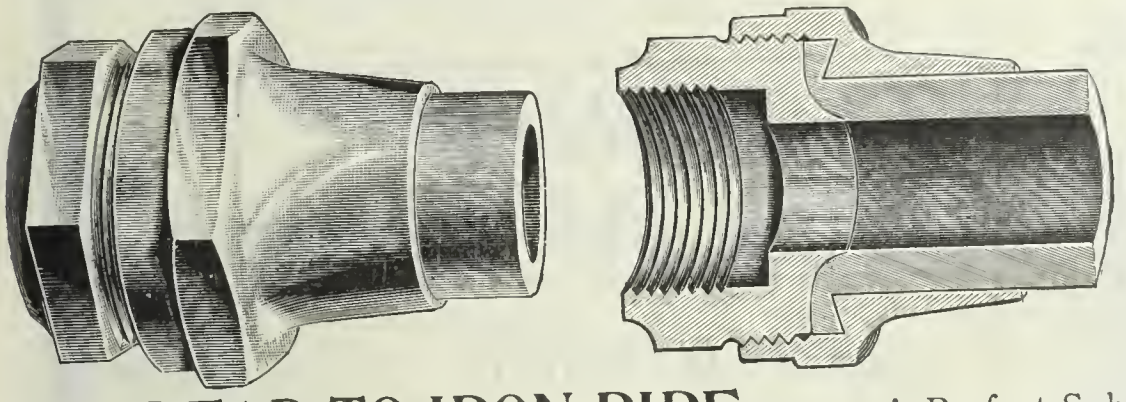

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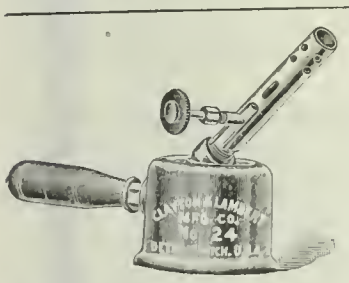

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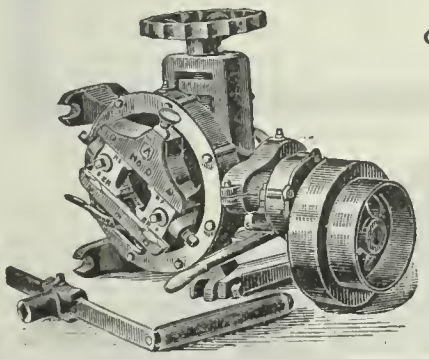

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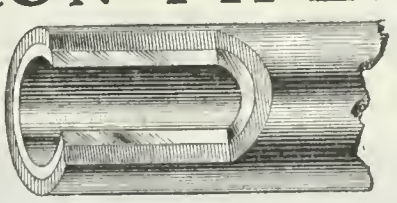

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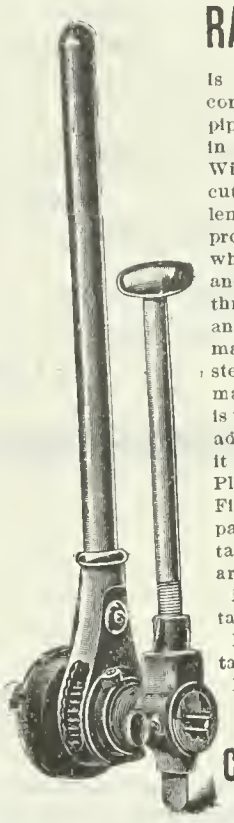

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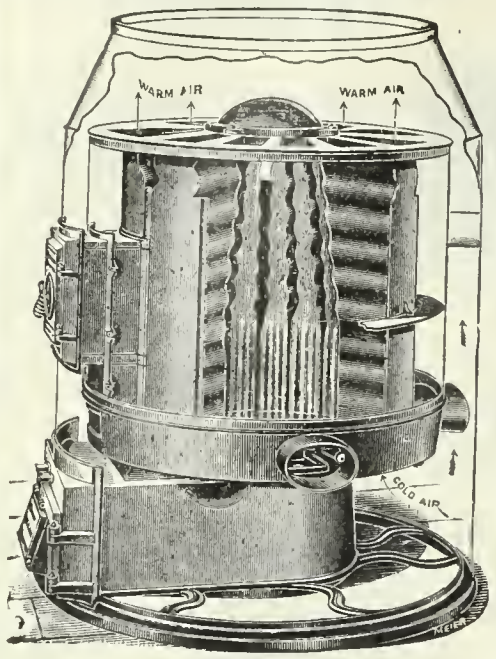

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Volume LVI.....No. 1
Index to Reading Matter.....Page 52

The Sheet Mill Strike

The strike of the sheet mill workers, which went into effect this week by order of the officials of the Amalgamated Association of Iron, Steel and Tin Workers, may or may not develop into one of the greatest labor struggles of recent years. About 20,000 men are at present affected, but it is freely whispered that the ultimate aim of President Shaffer and the Amalgamated Association leaders is to involve in the strike all the workers in the varied branches of the iron and steel industry, which are more or less controlled by the United States Steel Corporation. The question which has brought about the present strike is not one of wages or of hours of labor, the two main causes of labor troubles in the past. As a matter of fact, the men who are now on strike have been receiving, and would continue to receive, the highest wages ever paid in their branch of labor, while their conditions are vastly more favorable than those enjoyed by their fellow workmen in any part of the globe. Nevertheless, they are ordered out for the purpose of forcing the United States Steel Corporation, or rather the American Sheet Steel Company, one of their constituent concerns, to sign the wage scale on a union basis for each one of their works individually. As some of the most important sheet mills have never yet been recognized as union mills, the American Sheet Steel Company positively refuse to alter the present status at the demand of the labor unions. The United States Steel Corporation are quite indifferent as to whether their workmen are or are not members of the Amalgamated Association, but it is too much to expect them to act as organizers for the union.

Tenement House Improvement in New York:

The new tenement house law, which came into operation in New York City on Monday, July 1, contains a number of provisions which are calculated to secure material benefits for those who dwell in the crowded districts of the city. It is stated that there are no less than 82,000 tenements in New York which come under the terms of the new law. Some of its provisions are likely to cause irritation to owners of old tenement house property. For example, a clause provides that each room in old tenement houses must have a window opening to the outer air, or a window opening into an outside room. This will compel owners to put windows into the walls of rooms which are arranged with one front and one back outside window and two dark rooms between. There are over six thousand such tenements in the city. Where there are four dark rooms it will be necessary to put in a light shaft. Another most salutary provision of the law is one requiring owners to supply plenty of water at all hours of the day or night on each floor, and also to supply receptacles for rubbish, garbage and refuse. The sanitary value of these provisions, if they are strictly carried out, will be particularly recognized in such torrid weather as that recently prevailing. Enforcement of the regulations affecting new buildings has already been undertaken by the city Building Department, and the Health Department is responsible for seeing that the rules affecting old buildings are enforced until January 1, 1902, when the new city Tenement House Department of the municipal government created by the charter revision law will come into existence. It is the opinion among those best qualified to know that hundreds of the old houses now used as tenements will have to be abandoned if the new law is strictly enforced. The wiping out of such rookeries as cannot exist under the new law will be a satisfaction to all who have the well being of the city at heart. The owners, who are drawing a substantial revenue from them in their present unsanitary condition, are about the only persons who will regret their disappearance.

At a recent meeting of the Austrian Industrial Union statistics were given to prove that water power was cheaper to use and much cheaper to operate than steam power, and that the general utility of the former was substantially as great as that of the latter. The following test case in the Tyrol was mentioned: A factory was equipped with both water and steam power of exactly the same volume. The water power cost 65 cents per horse-power, and the steam power 73 cents. In the cost of operating, however, the difference was much greater. With water the expense was 0.07 cent per horse-power per hour, while with steam the cost was 0.61 cent. The saving in a year by the use of water at this factory amounted to $203,812, representing approximately a capital of $4,060,000. Water power is a highly important factor for cheapening the cost of manufacturing in the mountain region of Austria. Many streams abound, all of which are utilized in turning the wheels of industry at a small cost. This is the secret of the success of Austrian manufacturers in certain lines in placing their goods in foreign markets at a materially smaller cost than those of other nations.

The growth of the co-operative movement in England has been little less than phenomenal. Fifty-seven years ago 28 men in Rochdale with a capital of $140 began the co-operative distribution of merchandise. The first year their trade was $3550. At the end of last year there were in the United Kingdom 1464 distributing societies, with a membership of nearly 1,750,000, a shared capital of $100,000,000, and a trade of over $250,000,000. About $35,000,000 was returned to the members, amounting to a net economy in the spending power of the consumers' money of about 15 per cent.

United States Consul Hughes of Coburg, Germany, calls the attention of the State Department to a scheme which he says is being advertised extensively in the shape of a machine for turning common peat into so called artificial coal at the rate of $1.10 to $1.20 per ton. The company making this fuel are said to be located somewhere in Eastern Prussia, and the claim is made that this process will make a fuel that will take rank between

a good English coal and anthracite. The statement is advanced that the managers are about to organize a company in the United States, so the Consul believes that it would be well for American investors to exercise caution nntil the real worth of the process has been proved. He has reason to believe that it is valueless.

The aggregate of dividend payments made on July 1 to the bondholders and stockholders of railway, industrial and other corporations is estimated at $53,816,000, this being by far the largest snm ever paid on Jnly 1. The dividend disbnrsements on Jnly 1, 1900, amounted to $38,611,000, which was the largest snm np to that time.

It is announced that a meeting of labor leaders will be held in Chicago on Monday next, Jnly 8, for the purpose of forming a national alliance of trade nnions. President Shaffer and other leaders of the Amalgamated Association of Iron, Steel and Tin Workers are nnderstood to be among the leading spirits in this movement, and it is freely stated that one of the real pnrposes of the alliance is to combine in one organization all the employees of the United States Steel Corporation, including the workers in the mills, blast furnaces, coal and ore mines, docks, and other forms of skilled and nnskilled labor. No small opposition to this movement is making itself felt among the labor unions. It is regarded as an attempt to set np a new organization in opposition to the American Federation of Labor, which aims to cover almost precisely the same ground that the proposed alliance of trades unions expects to occupy. The movement will be watched with considerable interest, as it is likely to exert considerable influence upon the relations between the United States Steel Corporation and the workmen in their various properties.

So desperate is the condition of the farmers in certain parts of the West that it is feared a large portion of the rich fields of wheat may be ruined for want of sufficient labor to harvest them. A curious incident illustrating the stress to which they are put comes from Kansas, where, a few days ago, a party of 20 Osage County farmers held up a west bound Santa Fé train, near Peterson, in order to obtain the necessary help for harvesting their grain. In spite of the active opposition of the train hands they compelled the train to stop and cut loose two emigrant cars containing men bound for further Western points. With the aid of clubs, shotguns and similar forcible arguments, which resulted in serious injnry to several on both sides, the agriculturists finally snceeeded in secnring and marching off to their farms 200 harvesters to work at a wage of $3.50 a day.

The report of the United States Health Commissioner for the city of Havana, covering the year 1900, shows that under the American *régime* the average death rate of that city was reduced from 33.21 per 1000 popnlation to 24.40. Morcover, the returns for the first few months of 1901 have demonstrated that this considerable reduction has been still further bettered to an average death rate of 19.2 per 1000. Yellow fever has been materially checked and the mortality of infants has shown a marked redncticn, owing to the sanitary laws which are enforced by the American military officers in charge of the Health Department. In short, Havana has been transformed in the past two years from a virtnal plagne spot to a city which compares favorably, from a sanitary point of vlew, with the average of civilized centers of population.

The Carnegie Technical School.

The advisory committee appointed by the Board of Trustees of the Carnegie Institnte of Pittsbnrgh, to investigate and prepare a plan for the proposed School of Tochnology to be presented to the city of Pittsburgh by Andrew Carnegie, have handed in a report, which advocates the establishment of three grades of schools. The first will be the Carnegie Technical College, which will provide a technical edncation to high school gradnates, teaching engineering in all its branches. The second, to be called the Carnegie Technical High School, will be for the benefit of gradnates of the grammar schools, and will provide, in addition to the regnlar high school studies, instrnction in blast furnace and foundry practice, brass founding, pattern making, metal working, stationary, locomotive and marine engine and boiler management, gas manufacture, electricity and other departments, more particnlarly adapted to the needs of the Pittsburgh district. The third school will be the Carnegie Artisan Day and Evening Classes. These classes are intended for the benefit of those who are unable to take advantage of the more complete courses in the technical school.

Austrian Commercial Expedition.

United States Consul-General Carl B. Hnrst of Vienna, Austria, sends to the State Department further information regarding the Anstro-Hungarian commercial expedition which is about to be dispatched to Eastern Asia. This expedition, the Consul says, has been very carefully organized and is under the leadership of an Anstrian merchant who has resided many years in the Orient. The exhibition has received no Governmental or other subsidy, but it is undertaken on a business basis calculated to render the enterprise a financial success. This is the second ventnre of the kind that has been made under the same management. The first, to which reference was made in these columns abont two years ago, was a profitable nndertaking, and the present exhibition, improved in eqnipment and traveling further afield, is calculated to bring in substantial retnrns for the promoters, and to open markets for Anstro-Hungarian goods in some places where that country is now nnrepresented. Italy in recent years has tried this scheme to advantage and the Italian Trading Company, organized to exploit Italian products abroad, are now a vigorons and paying body, with a membership of over 500 manufacturers. Germany sent out to the far East, in 1898, a commercial exposition which was absent over a year and achieved gratifying results. Austro-Hnngarian exporters and mannfactnrers desirous of participating in the present expedition are permitted to send samples occupying a space of not more than 36 cubic feet and having a weight of 1 ton, at a cost of $200, and for each further like qnantity $100 is charged.

Outside of a moderate commission on orders reaching the exhibiting manufactnrer directly or indirectly through the medium of the expedition, no further charges are made. The expedition was to start this month, stopping on its way in New York and in San Francisco, and making exhibits in Japan, China, Siam, the Straits Settlements, Sumatra, Burmah, India, Aden, Suez and Port Said. The aim of the directors is to carry samples of Austro-Hungarian mannfactures to exhibit them in suitable places and take orders and to collect samples and price-lists of salable articles abroad, and submit them to manufacturers in Austria interested in such goods. Among the direct advantages that this commercial expedition offers are the assurance that goods will be energetically exploited in a proper manner and the certainty that orders taken on the basis of the exhibited samples will reach the mannfactnrers concerned, and that cash payments will be made npon presentation of the bill of lading by some Enropean bank to be designated at the time. Detailed reports will also be made to the manufacturers of the condition of foreign markets, their demands and requirements, together with snggestions as to Austrian goods liable to sell there, their quality, designs, method of packing, &c., as well as information regarding prices and terms.

W. K. Vanderbilt, Jr., has purchased and is importing into this country a Mercedes make of antomobile built in Germany, which is one of the largest motor vehicles yet constrncted, and is also claimed to be the fastest machine of its kind. The antomobile is of 40 horse-power, and in its tests made a speed of 72 miles an hour. The most peculiar part of the carriage is the dasher, which, instead of running ont in front runs underneath. This arrangement is claimed to give a greater amount of speed.

ACETYLENE STOVES AND THEIR APPLICATION.

BY A. J. MURDOCK, M D., MINNEAPOLIS, MINN.

There has been, and is now, a general impression abroad that acetylene gas cannot be used for cooking purposes. Not only among those who have been actively engaged in promoting acetylene lighting, but the general public as well.

One of the first questions asked by a purchaser of an acetylene lighting plant is, "Can we use this gas for cooking purposes?" The answer has been "No." Some of the earlier experiments were made with ordinary burners used for city gas, with the result at least of shocking the nerves and conveying the impression that acetylene gas was something that could not be safely manipulated. This was largely due to the disastrous results from explosions of compressed gas, and the fear and prejudice created at that time had a deterrent effect on experimenters along these lines.

We began our experiments with acetylene gas for cooking about two years ago, and have continued them uninterruptedly until recently, and we desire to state that of the hundreds of different devices for burners constructed and tested by us, not the slightest accident has resulted to our workmen, nor injury to material used in the experimonts. This was a new field of work. There were no guides, no rules, no precedents, no experiences, of either success or failures. No gas burner ever made previous to this time was adapted to burn acetylene gas satisfactorily. At this writing we may be permitted to claim that we have had experience, failures, and ultimate success. We are glad to say that we have so far perfected a device for burning acetylene gas that we are confident that, when it has been tested on its merit, it will meet with approval.

THE DEVELOPMENT OF HEATING BURNER.

Our first experiments were with the Buuson burner principle and construction, a flat, circular burner, with fine wire gauze, with requisite air mixer, and while with the burner thus constructed we could obtain the yellowish blue flame, the consumption of gas, as well as heat produced, was limited to a small amount. The burner became carbonized and required frequent cleaning. The slightest breath of air extinguished the flame, and the odor was disagreeable. We very early discarded this form of burner as impracticable. The burner we have produced is constructed of perforated steel, with outer and inner walls with coarser perforations on inner than on outer wall, and intended to supply the top of the burner only. At the bottom of the cylinder there is a concave surface or distributer. There is a mixing chamber, a draft stack and a feed tip, the latter so located in the draft stack as to partially mix the gas with air before reaching the burner. The secret of perfect combustion of acetylene gas consists in adding the proper proportion of air before reaching the burner.

By increasing the burner surface and supplying sufficient gas, properly mixed with air, almost any degree of heat desired may be obtained up to a certain limit. By following this rule a burner can be had that will consume all the way from 1 foot up to 10 feet per hour. Our standard size will consume about 3½ feet per hour. What is desired is the greatest amount of heat from the least amount of gas. This we believe is secured with our burner. The feed tip is so constructed that the gas enters the mixing chamber through 12 jets pointing in different directions and giving the air and gas a rotary motion, which insures a perfect admixture, that burns with a blue flame. Theoretically, the proportion of mixture is about 10 per cent. gas.

TO AVOID LIGHTING BACK.

Acetylene gas is rich in carbon, 93 per cent. carbon and 7 per cent. hydrogen. Acetylene gas contains about double the heat units contained in city gas, hence the small volume of gas per hour as compared with the city gas. The igniting point of acetylene gas is about 500 degrees C., which is a lower igniting point than any other gas. Experiments have shown that acetylene gas will ignite from a red hot wire; so, too, it will ignite in the burner if it is allowed to be heated to that point. It is therefore necessary to limit the heat produced to below that point. This is one of the causes of flashing back that has been such a troublesome feature in obtaining a practicable burner.

Our feed valve is so adjusted that the supply of gas to the burner is below this igniting point. In other words, if directions are followed there will be no flashing back with the Alpha cooker. Should this occur there is no report, no smoke or soot, no carbonizing or clogging of the burner, for the reason that the supply of gas in the draft stack is fed through a regular six-flame lighting burner, so that, in case the burner should become red hot and ignite the gas in the draft stack, it simply lights the feed tip, and it can be turned off and lighted again on top. We wish to call attention to the fact that the pressure required for our stoves is the same as for lighting, and is of sufficient range to be adapted to all generators. We build all our stoves high, for the purpose of obtaining sufficient draft; the better the draft the better the operation.

With pure acetylene gas there is practically no odor in its combustion. When certain styles of generators are adopted there will be no complaints on this score.

DEMAND.

Since placing our stove on the market we have had thousands of inquiries, and these inquiries come largely from consumers who are anxious to utilize acetylene gas for cooking, especially in summer, when the wood or coal fire is objectionable on account of the heat. The introduction of acetylene gas for cooking purposes depends largely on the generator dealer and agent. If he is prepared to give an intelligent opinion as to the merits of the stoves on the market, and advise his customers accordingly, he will find a more ready sale of generators. Perhaps few generator makers, or their agents, realize fully the advantage of being able to place a stove with a generator—very often the stove sells the generator. Not only that; but if acetylene is used for cooking a generator of double the capacity is required than for lighting alone. This means larger commissions to agents in addition to the commission on the stoves. Every generator manufacturer should have an acetylene stove in his office or factory where he can demonstrate to a customer the utility and practicability of acetylene gas for cooking purposes. The use of acetylene gas for lighting or cooking has been, is now, and will continue to be, a matter of education, and agents must be the educators.

Recently we have added a water back to our stove, which is heated by a coil placed around the perpendicular portion of the burner. This easily heats a pailful of water, while the same burner is used for cooking a meal. With our two-burner stove, fitted with coils, sufficient water can be heated for a bath as well as heating the bathroom in a short time.

The range of application of the Alpha stove is practically the same as any other gas or gasoline stove. It is adapted to all kinds of cooking and baking. At my home we have baked bread in from 35 to 40 minutes, and biscuits in 10 minutes. The baking is especially satisfactory. It is suitable for tea and coffee urns, laundry, labatory and dental work. Dentists in small towns, where other gas is not obtainable, will find the heat sufficient to melt babbitt metal, zinc and such materials as they use for molds, vulcanizing, &c. We have adopted a burner of medium capacity, but, if more heat is required, special burners can be furnished to order.

A COMMERCIAL postal card, which is being sent out by the Minnesota Stove Company of Shakopee, Minn., carries illustrations of two air tight Heaters which they are manufacturing. The first of these is known as the King Coral, which is mounted with heavy steel, has full return flue, heavy cast linings, antismoke curtain, air tight flue stop, and two griddle holes under the swing top. The Stove is referred to as a new idea in air tight construction, and as being the only base heater of its kind on the market. The second illustration is that of the Star Coral, a direct draft cast top and bottom air tight stove of attractive exterior. It is mounted with heavy sheet steel, has cast linings, antismoke curtain, screw register and one griddle hole under the swing top.

Monitor Furnaces.

A copy of the 1901 catalogue of the Keith Furnace Company of Des Moines, Iowa, devoted to the Monitor warm air furnaces, has just reached us. Following a page view of the molding room at the company's factory, the catalogue presents views of their warm air furnaces, and of parlors, sitting rooms and dining rooms in houses heated therewith. The Monitor furnace is made in a variety of styles, adapted for using hard and soft coal and wood. The soft coal furnaces are provided with a hot air blast, which can be regulated from an upper floor. The furnaces are made both with steel radiators and with all cast iron radiators, so constructed that an indirect draft is effected, with a view to utilizing the heat of the gases. The Monitor wood furnace, which is made to burn wood 3½ to 5 feet long, has a corrugated fire chamber to increase the heating surface. The products of combustion, on leaving the fire chamber proper, pass through an oval steel radiator, or find a direct outlet to the chimney, according to the manipulation of the damper. The furnaces are provided with water heaters, for use in combination heating.

The concern also make an indirect tubular hot water radiator designed for placing in the hot air chamber of the furnace to increase its heating capacity. The Monitor room heater is designed to take the cold air from the floor of a room, heating the air and discharging it through perforations at the top, so as to keep up the circulation of air in the apartment where it is used. Special cuts show the construction of the ash pit and grate and their damper attachment. The last few pages of the publication contain useful information for heating contractors and also a register price-list. The last page is devoted to a general view of the company's plant.

Kalamazoo Stove Company.

The Kalamazoo Stove Company, Kalamazoo, Mich., were incorporated June 24, with a paid capital of $65,000. The following officers were elected: Edward Woodbury, president; Wm. Thompson, vice-president and general manager; Chas. A. Dewing, treasurer, and A. H. Dane, secretary. The following Board of Directors were also elected: Edward Woodbury, Wm. S. Dewing, Chas. A. Dewing, James Dewing, Jerome M. Snook, Geo. E. Bardeen, Wm. Thompson and A. H. Dane. Wm. Thompson, the vice-president and general manager of the company, was formerly superintendent of the Buck's Stove & Range Company of St. Louis, and at present is superintendent of the Cribben-Sexton Stove Company of Chicago. He naturally is well qualified for his new connection. A. H. Dane, the secretary, is at present representing the Michigan Stove Company on the road, and is well known to the stove trade of the North and Northwest. The company will erect a modern stove plant at Kalamazoo. The main building will be 350 x 120 feet, and it is the intention of the company to put on the market a complete new line of steel ranges, cooks and special heaters. The present address of the vice-president and general manager is 633 North Boulevard, Oak Park, Ill., where all communications intended for the company should be sent.

The New Model Oak.

One of the latest additions to the extensive line of heaters which the Portsmouth Stove & Range Company of Portsmouth, Ohio, are offering the trade is the Model Oak, a handsome construction made in four sizes and with diameter of drum ranging from 12 to 18 inches. The manufacturers state that every good point or feature of construction contained in their Oak stoves has been retained, while certain new ones have been added. Special attention is drawn to the anti-buckling drum, gas burning register in the feed door, draw center grate and round air tight register, which is ground into its seat on the inside of the ash pit door and will remain at any degree of opening required to supply air for combustion.

The Model Oak has an extension cast solid on top of the fire pot extending up inside of the steel drum, but as this extension is a part of the fire pot it cannot twist and warp. A sectional ring fits over the flange turned out on bottom of the steel drum, which, in its turn, fits down on the flange of the fire pot. Then the ring and the fire pot are bolted together with the drum flange between them, the bolts being all on the outside of the stove. In the ornamentation nickel has been somewhat liberally employed, and the foot rail is sufficiently broad and depending to practically cover the fire pot section of the stove. A six-page folder which the company have issued shows a general view of the stove, as well as a sectional view, clearly indicating the essential features of construction.

THE NEGRO AS A MOLDER.

BY INSPECTOR.

About 16 years ago I had occasion to make a somewhat extended tour of the South. At that time I learned many things which were interesting, but not altogether true. Indeed, as I grow older, the fact is borne in upon me that a large part of one's life is spent in "learning things that aren't so." One of the things I learned at that time was that the negro as a molder was a discovery of inestimable value to the stove trade of the South, and in no less degree to those engaged in other branches of the foundry business. I well remember being taken through the principal foundries of Louisville, Chattanooga and other Southern cities, many of them newly established. They were full of negro molders, as happy as pigs in a puddle, dancing jigs on their molds and singing when the fancy for melody seized them. Upon inquiry I learned that the negro was a "natural born molder." One superintendent, perhaps a little more analytical than the rest, explained that molding was rather an art than a trade; that no man could attain the Empyrean hights of complete success in the casting of stove plates who was not rather an artist than a mechanic, and that the negro was gifted by nature with exactly the qualities which made him pre-eminently a success on the molding floor. He explained that the talent which enabled the negro to pick up music, and with very little trouble learn to play any instrument well, was not wholly a mental gift, but indicated a certain deftness of fingers as well. He made a better molder than the white man for the reason, among others, that in withdrawing the pattern from the sand he had a lightness and delicacy of touch peculiar to himself, and which gave his work a distinct character of its own. This was illustrated in many agreeable and instructive ways, and from what I saw in going about, I was convinced that the negro was, as my Southern friends said, a natural molder.

I remember very well that at that time the prediction was made, and believed by those who made it, that the business of stove making in the North was doomed to extinction, for the reason that, in addition to cheap iron, the South had an unlimited supply of labor in the negro, who could live for less than the white man, was content to do so, was tractable and docile, could not be organized into unions, and was, on the whole, much better than any white labor available. I was measurably credulous in those days, but I did not take this prediction quite seriously. However, it did look as if the freed man of the South had found his vocation, and that as a molder he was destined to contribute mightily to the upbuilding of the industries of the new South, and make it the natural home of the stove trade.

Well, I have just been over pretty much the same ground again within the past few weeks. I did not meet many of the same people who entertained me 16 or 17 years ago. I was sorry for this for a great many reasons, partly personal to myself and partly in the interest of an impartial reinvestigation of the subject under consideration. The vicissitudes of lean years have sent some of them out of the business. More have gone where stoves are unnecessary, a condition supposedly true of either destination in the hereafter. One cannot conceive of a climate in Heaven requiring artificial heat; still less one at the other extreme which should impose the same necessity. (I trust the reader will

pardon this digression. An old man becomes discursive when thinking of those who have preceded him across the border.) To return. My information this time was gained from a new set of foundry managers, which may account for the fact that when I asked how the negro was making out as a molder, and repeated what had been told me 16 years ago, a lambent smile overspread their faces, and what they had to tell me made me feel very much like Rip Van Winkle making inquiries about his dog Schneider. What I learned was this:

In only one stove foundry in the South, so far as is known to well informed foundry men, are negro molders employed. They are utilized for rough work of one kind or another, such as breaking pig iron, wheeling castings and the like, but not as molders. To the one foundry where they still have floors I went. It chanced to be the one whose analytical superintendent had given me the reason for the pre-eminent fitness of the negro for this work. I found about half the floors still occupied by negroes, but for quite other reasons than those which had accounted for his original employment. A free, but I think fair, paraphrase of what was told me would be about as follows:

"We employ, as you see, negroes enough to occupy about half our floors. This is not because they are good molders, for not one of them has ever attained the average standard of the white molder, or ever will. This is an open shop, and some of our people think it good policy to keep enough negroes to show that, if necessary, we could fill up with them. If a white man gets "cocky," it does him good to ask him how he would like to see a nigger get his job. If I had my way I would not have one of them around the place, but under the circumstances it may be good policy to keep a few of them simply to keep the union from attempting to get control of the shop.

"Out of the whole number of negroes we employ there are not more than six who are trustworthy men and can be relied upon. The average negro can become a good molder if he will—that is, he has the natural capacity for the business—but it is not in him. All his natural traits and instincts are against it. He takes no interest in the work, except as a means of earning wages, and rarely becomes a conscientious mechanic. He is unsteady, and if indulged in the least would invent more excuses for staying away from his work than a white man would think of. Even when he knows how to do his work properly he will not do it unless constantly watched. His percentage of defective plate is large, and he is never truthful in giving the reason for it, but will always try to throw the blame on some one else. Our white molders always have their floors put up before the blast is on the cupola, but the negroes never do. They will potter around, wasting time, and keep on molding until the bottom drops. As a consequence, much of their work is slighted. They handle the ladle very well, but it seems to be impossible to impart to them any intelligence as to the proper heat at which to pour for different kinds of work. The negro never thinks he can have his iron too hot. As a consequence he will take it as quick from the cupola to the mold as possible, and if not closely watched will pour so hot that the sand is burned to the castings.

"Another thing which it seems impossible for him to learn is the proper care of patterns, tools and other property of his employer. He is very hard on patterns and will wear them out and destroy them much faster than white men. For this reason he is not an economical workman at any price. We pay the negro on piece work very nearly as much as the white molder gets on the same class of work. The actual difference is not over 4 per cent. in favor of the white man, but in my judgment he is not worth as much as the white man by 10 or 15 per cent. He will steal anything he thinks he wants or can get money for. This is a race trait. It would not seem as if there was much about a stove foundry which would tempt to petty larceny, but our losses from stealing are considerable.

"I think it is probable that when you made your first inquiry as to the negro in stove founding, we thought better of him than we do now. Instead of improving he is deteriorating. The present generation of young negroes is not as good as that brought up under the discipline of slavery. If I owned and operated a foundry of my own, and had no one to consult as to its management, I should not have a nigger about the place at any price. This is the net result of about 19 years' experience with them.

"In some of the foundries where they do a rougher class of work than will go in a stove foundry negroes are more or less employed. I am told they do very well in certain departments of the pipe foundries, in plow works and in some other operations. I imagine, however, that even there the highest function of the negro is found in the fact that he will not join the union. For some reason he is afraid that if he did the white man would sooner or later get his job. In this he is undoubtedly right. He cannot compete on equal terms with the white molder, and if he wanted the same wages he would lose his job, sure."

I do not need to say that I came away disillusionized. The conviction so long cherished that in the foundry the negro had found his sphere of conspicuous usefulness was rudely dispelled.

The Independent Stove Pipe Radiator.

We show in the accompanying illustrations two styles of the Independent stove pipe radiator, which is being manufactured by the Independent Register Company of

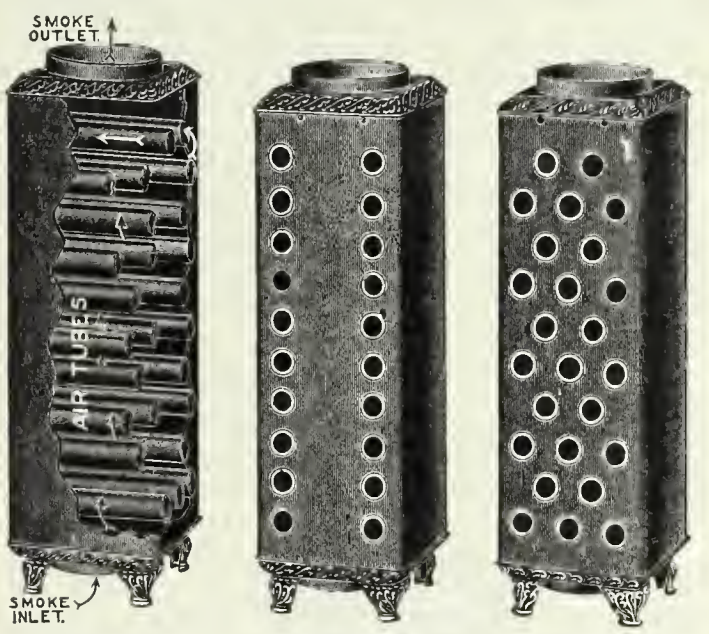


Fig. 1.—Broken View of Radiator Showing Internal Construction.

Fig. 2.—Radiator for Soft Coal.

Fig. 3.—Radiator for Any Fuel Except Soft Coal.

The Independent Stove Pipe Radiator.

Cleveland, Ohio. The radiator is made square with ornamental cast iron top and base, finished in either nickel plate or black japan, as may be desired. The outer wall or shell is made of either Russia iron or cold rolled steel, the shell being filled with steel radiating tubes which pass from the back to the front of the radiator, as indicated in Fig. 1 of the engravings, which represents a broken view of the device. By means of the arrangement employed there is a constant circulation of air through the tubes, while the products of combustion must pass over them on their way to the chimney, thus utilizing to the fullest extent the heat generated. The point is also made that a moderate circulation throughout every part of the room is created, thus producing a uniform temperature. In Fig. 2 is shown a radiator for use where soft coal or any other fuel is employed, the makers pointing out that the nature of this material is such as to require a different style of radiator from that used where hard coal, coke or wood is burned. The company state that in the construction shown they have a radiator which will not clog any more than a joint of stove pipe, while at the same time they retain the valuable radiating features of their other styles. Fig. 3 shows a radiator for use in connection with any fuel except soft coal. Here, it will be observed, the radiating tubes are "staggered" instead

of being arranged in two rows, as shown in the previous engraving. The manufacturers claim that an Independent radiator used in the same room with a stove will double its heating power, or result in an economy of fuel.

The Pioneer Stove Company.

C. S. Reynolds & Co., Columbus, Ohio, have been incorporated, with a capital stock of $100,000, uuder the style of the Pioueer Stove Company, with the following officers: George W. Lattimer, president; George B. Kauffman, vice-president; Allen W. Williams, secretary aud treasurer. The company now own all of the patterns formerly belonging to Geo. W. Gill and C. S. Reynolds & Co. Besides the present large manufacturing business, they expect to do a large jobbing business in gas stoves, oil stoves and refrigerators, and are now arrauging a large addition to their warehouses.

This business was originally established by John L. Gill in 1826, was succeeded iu 1868 by Geo. W. Gill, and in 1888 by C. S. Reynolds & Co., and was incorporated July 1, 1901, as the Pioneer Stove Company.

ODD PLATES.

W. H. Colebrook Sons & Co. of Syracuse, N. Y., have lssued a patriotic folder, prominently referring to the "Glorious Fonrth" and to tlc fact that it is the day when Americanism is the chief sentiment and one when we are proud that we are Americans. It is the day when "Old Glory" plays a conspicuous part iu the celebrations of the occasion, and the folder which the company send out is so arranged that by means of a string runuing through an eye in the card at top and bottom tlc American flag can be drawn to the top of a Liberty pole, which occupies the foreground of a picturc representing a landscape with the city in the distauce. Above the sceue is the request to "run up Old Glory at 12.01 a.m. aud don't take it down until 11.59 p.m., and make things hum all the time." Tlc front page of the folder carries tlc representation of an immense fire cracker, with a small boy about setting it off, while the fourth page is embellished with pictures of crackers and tin horns with the date July 4 in large red letters. Incidentally, the company refer to their Asbestos Furuace Cement and Stove Putty and state that Charles Smith & Co. of 122 Lake street, Chicago, Ill., are Western selling agents.

The Peerless Stove & Range Company of Columbus, Ohio, are distributing among their friends in the trade an eight-page pamphlet bouud ln paper covers of a deep red color, aud illustrating and describing the Peerless Gas Heaters. The Peerless Double Heater is of the open front style and is intended for using natural gas as a fuel. It is embellished with oxidized copper ornaments in some cases, and in others the designs include nickel plated ornaments, the bodies being of a dead black. The Peerless Queen is of the closed front style of Heater and is also intended for using natural gas as a fuel. It has Russia iron top and sides, aud the interlor construction is much the same as that employed in the Peerless open frout Heater just referred to. The statement is made that tbe No. 18 x 30 will fit into the opening of a modern wooden mantel, covering the mantel frame and making a complete fire place Heater. The sales agent for tlc Plttsburgh district is Charles A. Butler of 504-506 First avenue, Pittsburgh, whose imprint also appears upon the front cover of tlc pamphlet.

A four-page folder, just issued by tlc Buckwalter Stove Company of Royersford, Pa., illustrates and describes tlc Eclipse Junior Furnace, which is offered in five sizes and is referred to as a most efficient and practical Heater. The radiator is constructed of heavy steel plate and the joints have broad flanges packed with asbestos cement. Tlc radiating surface consists of tlc heavy fire pot with broad corrugations, conical one pieced dome, and the inner and outer surfaces of tlc radiator. A special feature of the furnace is this inner dome, which is gas and dust tight, while another feature is the triplex grate, which is the style used by the company ln all of their Ecllpse Furnaces. Illustrations are given of many of the important features of the Furnace, aud the folder as a whole is calculated to give the dealer and consumer a very good idea of the construction employed.

The Superior Mfg. Company of Allegheny, Pa., have applied for a charter. The company, who have a capital stock of $25,000, propose to go into the manufacture of Gas Logs and Asbestos and Sheet Steel Burners for the burning of gas for domestic and manufacturing purposes. Tlc concern have for some time been operating a small factory on Sherman avenue, but are now ready to move into their new quarters, a three-story factory, fronting 1600 feet on the Pennsylvania line, at the corner of Said and Magnolia streets, Allegheny. Those interested in the new concern are W. T. Bradberry, formerly of the Anschutz-Bradberry Company and later vice-president of the Pittsburgh Stove & Range Company; William H. Collingwood and Thomas M. Dudgeon, formerly with Bissell & Co., and Robert A. Bradford. The new plant will employ about 50 men.

Vulcan Club Goes to the Pan-American Exposition.

The Vulcan Club of Cleveland, Ohio, has again set the pace for organized business iuterests who may be in doubt as to the extent to which their functions may be diverted into the channels of social intercourse and recreation *en masse*. The fact that tlc furnace interests of the country at large have not been able, so far, to approach one another in the way of organization as exemplified in almost every other large industry evidently does not deter this aggressive body from going outside of its home limits—even if they are forced to convene among themselves. The time aud placc for their latest outing appear to have been well chosen—Buffalo beiug in all respects an ideal summer city, and the exposition requiring no comment, except in so far as the verdict after seeing it is that "it excels the World's Fair in many particulars, and is accessible to a larger number of people."

Fourteen of the association participated in the excursion, leaving Cleveland on the night of June 13 and arriviug at Buffalo on the moruing following. The hotel accommodations, which had been engaged in advance, left nothing to be desired. Friday and Saturday were spent within the expositiou grounds in sight seeing and on Sunday a side trip to Niagara Falls and Lewistou was undertaken. This feature of the programme was thoroughly enjoyed and it was with many regrets that the Cleveland party bid adieu to their hospitable surroundings in the Expositiou City. The Cleveland and Buffalo boat carried the party home on Sunday night, aud on 14 day books on Monday was inscribed "Best time I ever had ended this day."

The arrangements for this enjoyable affair were made and carried out by W. H. Dettlebach and Frank Potter, to whom too much credit cannot be given for its entire success. It speaks well for the strength of this organizatiou that tlc entire expense of this jaunt was defrayed by the treasurer without affecting his credit at the bank.

Percy G. James, 366 Fulton street, Jamaica, L. I., the proprietor of a very well equipped Hardware store in that town, carrying a large assortment of merchandise, has just built in the rear of his new brick storc building a two-story frame warehouse for storing such bulky goods as Lawn Mowers, Wheelbarrows, Nails, Horseshoes, Wire Cloth, &c. He has also screened the windows and doors of the entire building, front, side and rear for the protection of customers, clerks and goods from the annoyauce of flies and mosquitoes.

In the refereuce to the incorporation of the Columbiau Enamcling & Stamping .Company in our issue 22d ult. the location of the company, Terre Haute, Ind., was inadvertently omitted. It is the intention of this company to manufacture tlc lines of goods formerly made by the Bellairc Stamping Company, Harvey, Ill., whose expert labor and special talent are connected with the new concern. Tlcir new plant will be a modern one in every respect.

Arkansas Retail Hardware Dealers' Association.

The second annual meeting of the Arkansas Retail Hardware Dealers' Association was held in Hot Springs, Ark., on the 19th and 20th ult. Those present at the meeting were as follows:

E. W. Horne, Forrest City.
J. M. Pitman, Prescott.
E. E. Mitchell, Morrillton.
I. P. Rudolph, Arkadelphia.
W. M. Graham, Clarendon.
R. P. Graham, Fordyce.
H. E. Kyler, Eldorado.
W. A. Jackson, Cardanelle,
J. F. Maxey, Ozark.
J. P. Simpson, Malvern.
P. J. Tidwell, Buckner.
J. A. Plummer, Marianna.
W. L. Babcock, Hot Springs.
Frank Stearns, Hot Springs.
Mr. Whittington, Hot Springs.
Hamp Williams, Hot Springs.
T. G. Evans, Hot Springs.
Harry Vaughan, Hot Springs.
Morice Williams, Hot Springs.
John Dickerson, Hot Springs.
R. F. Roys, Russellville.
T. B. Stewart, Newport.
D. L. Graves, Arkedelphia.
K. G. McRea, Hope.
Mr. Wingfield, Hope.
Geo. R. Belding, Hot Springs.
Julian C. Brown, Hot Springs.
D. G. Fones, Little Rock.
J. Van Dokkum, Little Rock.
W. A. Cook, Little Rock.
J. H. Martin, Little Rock.
Mr. Lyons, Little Rock.
Mr. Hayes, Little Rock.
Mr. Bishop, Little Rock.
Mr. Corrington, Little Rock.
J. H. Boicourt, Little Rock.
Mr. Gladding, Memphis, Tenn.
Mr. Jackson, Indianapolis, Ind.
M. L. Corey, Argos, Ind.

Quite a number of the members were accompanied by their wives.

The meeting was called to order at 2 p.m. on the 19th.

President Horne in his annual address reviewed the steps taken to bring about the organization, and the success it was meeting, and said that much good to the members and the trade must result from it.

Secretary Plummer in his report showed the membership on June 13, 1900, was 40. He had since received applications for membership, duly indorsed, of 14 dealers, thus making the membership 54, an increase of 33 per cent. His financial report showed a total collection of $185 and disbursements of $53.75, with bills to be allowed at this meeting amounting to $70.25, leaving a balance in hand after paying expenses of $60.50.

M. L. Corey of Argos, Ind., secretary of the National Retail Hardware Dealers' Association, addressed the meeting. He outlined the work undertaken by the National Association and argued the necessity of all State associations joining it. At the close of Mr. Corey's address and after some discussion by the members, the following resolution, introduced by John M. Pitman of Prescott, was unanimously adopted:

Resolved, That the Arkansas Retail Hardware Dealers' Association become members of the National Retail Hardware Dealers' Association.

The chair appointed the following Nominating Committee: W. M. Graham, W. A. Jackson, J. P. Simpson, J. H. Boicourt, and R. F. Roys. T. G. Evans was appointed sergeant-at-arms.

At the suggestion of Mr. Corey the chair appointed a committee of two to attend to questions for the Question Box and to designate what questions should be discussed only in executive session. The chair appointed J. F. Maxey and J. P. Rudolph. On motion the association adjourned to convene Thursday, June 20, at 8.30 a.m.

Harry Vaughan of Babcock Hardware Company, Hot Springs, notified the association that the Committee of Arrangements had arranged for a hop and social at the Arlington Hotel, and extended a hearty welcome to the members and visitors.

"The Steps Necessary to Make a Success of the Hardware Business" is the title of a paper which was then read by E. E. Mitchell of Morrillton.

The following resolution was introduced and its passage recommended by the Committee on Resolutions:

"*Resolved*, That the definition of who is a retail hardware dealer, as outlined by the by-laws of the National Retail Hardware Dealers' Association, be adopted as one of our by-laws."

The association adjourned until 2 p.m.

At the afternoon session the Nominating Committee reported the following selections:

President, Jno. M. Pitman, Prescott.
First vice-president, J. F. Maxey, Ozark.
Second vice-president, T. B. Stewart, Newport.
Secretary-Treasurer, J. A. Plummer, Marianna.
Members of Executive Committee for two years:
Hamp Williams, Hot Springs.
J. H. Boicourt, Little Rock.
J. W. Lee, Fordyce.

Upon the vote being taken the above officers were unanimously elected.

On motion the Membership Committee was made to consist of five members, and its duties to assist the officers in procuring new members for the association.

The president appointed the following standing committees:

MEMBERSHIP COMMITTEE.
D. E. Watson, Hamburg. W. A. Jackson, Dardanelle.
C. T. Rosenthal, Hayesville. K. G. McRea, Hope.
D. H. Miller, Van Buren.

GRIEVANCE COMMITTEE.
J. A.Plummer, Marianna. E. W. Horne, Forrest City.
W. M. Graham, Clarendon.

COMMITTEE ON FRATERNAL RELATIONS.
I. P. Rudolph, Arkadelphia. W. B. Pillow, Helena.
F. L. Curfman, De Queen.

COMMITTEE ON TRANSPORTATION.
F. C. Stearns, Hot Springs. J. H. Boicourt, Little Rock.
F. B. Gregg, Little Rock.

PROGRAMME COMMITTEE.
E. E.Mitchell, Morrillton. W. L. Babcock, Hot Springs.
R. P. Graham, Fordyce.

On motion the president was appointed a delegate to the National Association.

Some of the questions from the question box were read, and the discussions participated in by quite a large percentage of the members. Among the questions were the following:

"What do you think of the new law against range, vehicle and other peddlers?"

"What is the best plan to be sure that a salesman puts all the cash he receives in the till?"

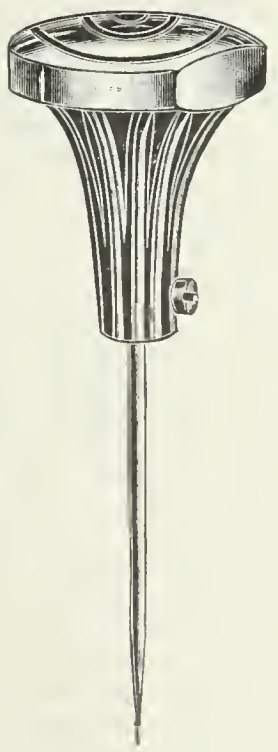
"Is the giving of premiums for purchases advisable, and if so, what is the best method?"

"Is the distribution of calendars and souvenirs a judicious system of advertising? if so, what is the best method of distribution?"

The next meeting will be held at Little Rock, Ark., on the third Wednesday in June, 1902.

The Modern Ice Pick.

Gilchrist & Means, 43 South Canal street, Chicago, Ill., have just placed on the market the ice pick herewith shown. The handle is of solid metal, making it quite

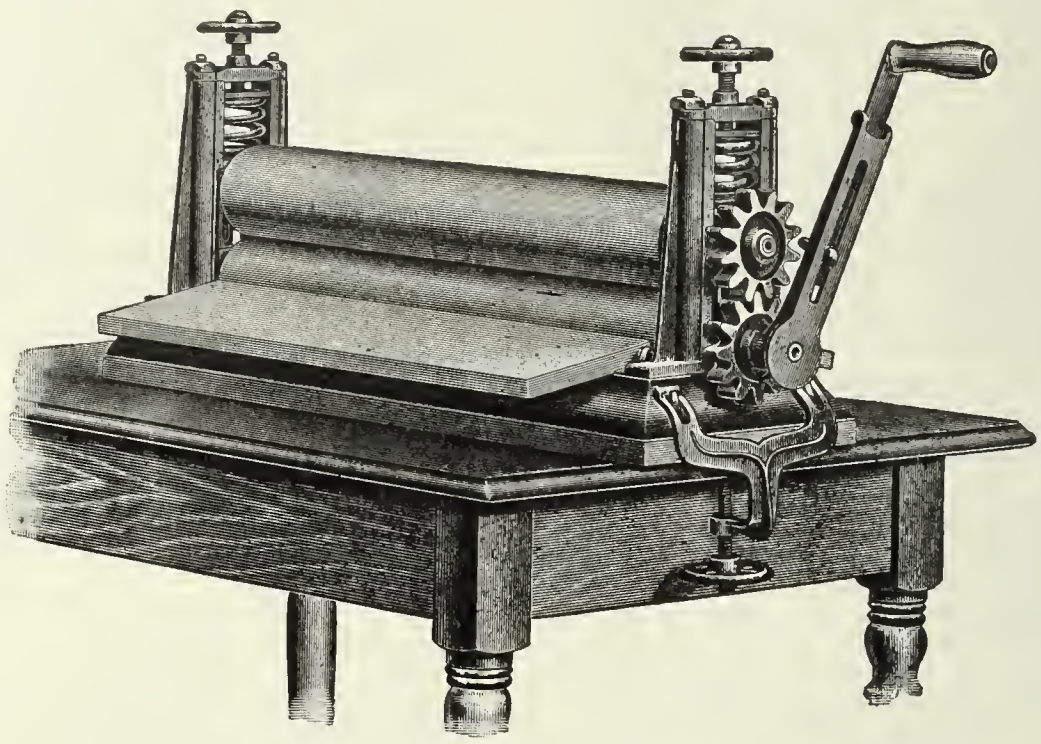


The Modern Ice Pick.

heavy. The pick is nickel plated, and one style is made with the head of the set screw countersunk, so that it does not project beyond the surface. No hammer or mallet is required in using the pick, a succession of smart strokes cracking the ice as desired.

The Household Mangle No. 21.

Herewith illustrated is a household cold mangle, manufactured by the Lawson Novelty Company, 115 Lake street, Chicago, Ill. The mangle is designed for domestic use. The machine is constructed with a strong coil spring at the end of the rolls. The shaft of the upper roll revolves on sliding journals so that the rolls may adjust themselves to the varying thickness of the goods.



The Household Mangle No. 21.

The mangle is geared to run smoothly and easily, and is supplied with an adjustable crank which can be made longer or shorter. The pressure between the rollers can be adjusted, it is explained, up to 700 pounds by the aid of the hand wheels above the coil springs. The mangle is so made that it can be readily attached to a table or shelf, and is made reversible so that it can be operated by either the right or left hand. The rollers are 4 inches in diameter, 24 inches long, and the machine occupies a floor space 15 x 30 inches.

A New Locomotive.

A locomotive of new and unique design was recently constructed by Walter E. Williams, San Diego, Cal., for his show window. It proved a strong drawing card, and was the recipient of much attention, being finally bought by an admirer, who took it into Mexico and Central America to show the "greasers" a "Yankee trick."

The locomotive was built up on a bed plate made of 1-inch board, 9 inches wide and 30 inches long, painted black. On this was placed the boiler, consisting of a joint of 7-inch stove pipe 24 inches long. The smoke stack consisted of a 1-Quart Tin Fruit Can, capped with a Nickel Cuspidor. A small Tin Pan served as the headlight. The bell was an Agate Funnel held in place by a frame made of Sheet Iron Strips. A small Stove Knob represented the clapper. The steam dome was made of a large Tea Canister, surmounted with a large Nickel Stove Knob, serving as the whistle. Two Drip Pans, fastened top to top with strips of Sheet Iron around Wire at corners of Pans, and standing on end, the bottoms facing front and back, formed the cab of the locomotive. The bell cord was made of a small Dog Chain. The cylinders consisted of Japanned Flour Dredge Boxes. Tin Pans served as wheels, a larger size being used for the driving wheels than for the pilot truck. These wheels were fastened to the wooden bed piece. The driving and connecting rods were made of strips of Tin. A Dust Pan served as the cowcatcher.

The tender was constructed with a bed piece of 1-inch board, 9 inches wide and 12 inches long, also painted black. To this two wheels were fastened on each side, the wheels being made of small Tin Pans, like those on the forward truck of the engine. Two Roasting Pans were fastened together, top to top. The bottom of one was laid on the bed board. This completed the tender. The wording used on the tender just described was: "San Diego & Salt Lake Railroad. No. 1."

Original Measuring Spoons.

Enterprise Mfg. Company, Everett, Mass., are the makers of the Original measuring spoons here illustrated. The three sizes eyeleted together, as shown in Fig. 1, can be used as seen in Fig 2 to accurately measure liquids named in cooking receipts, the three spoons

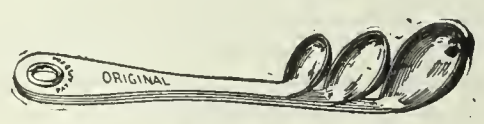


Fig. 1.—Original Measuring Spoon.

having a capacity of one-quarter, one-half and three-quarter teaspoonful, by the use of which units any desired proportion can be quickly and correctly obtained.

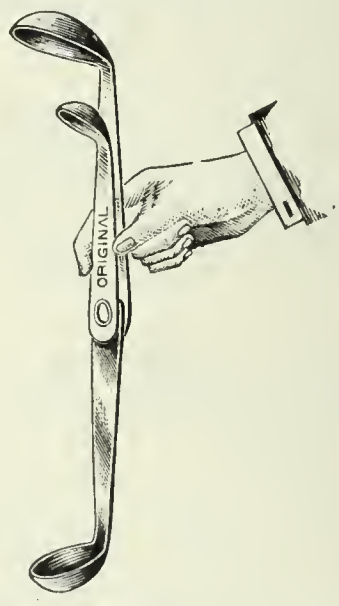


Fig. 2.—Method of Using Spoon.

These spoons are graduated to 15, 30 and 60 drops, respectively, these quantities being equivalent to ¼, ½ and 1 teaspoonful.

THE DUBUQUE ENAMELING WORKS, Dubuque, Iowa, have been reorganized and incorporated under the name of the Western Enameling Works, with a capital of $100,000. They will manufacture all kinds of Enameled Ware.

PAPERS FOR ENGINEERS' MEETING.

The preparations for the summer meeting of the American Society of Heating and Ventilating Engineers, to be held in Chicago, July 12 and 13, are progressing satisfactorily. We are informed by the secretary that the following papers will be read and discussed:

"Test of Radiators with Superheated Steam," by R. C. Carpenter.

"Heating with Hot Air Furnaces," by C. G. Folsom.

"Heating Systems in St. Louis Schools," by Alvin D. Reed.

"Quantity of Water in Hot Water Heating Systems," by W. M. Mackay.

"Efficiency of Different Parts of Boiler Fire Boxes," by R. C. Carpenter.

GOOD FITTINGS WANTED IN INDIA.

Water in India is dear, writes an English correspondent of *The Metal Worker*, and it is therefore very important that makers of plumbing goods who supply this market should see to the quality. It is computed by the water works engineer of Wolverhampton that the following descriptions of fittings are liable to give the following leakage (pressure not stated):

Waste by Leakage in 24 Hours.

Description of fitting.	Gallons.
½-inch tap, with bad washer	700
⅝-inch tap, with bad washer	920
¾-inch screw stripped washer	12,720
⅝-inch ball tap, washer bad	900
⅝-inch ball, lever strained	200
⅜-inch pipe burst	11,280
½-inch pipe burst	17,280
¾-inch tap, left open	23,520
½-inch tap, left open	12,000
⅝-inch tap, left open	9,600

This may not appear to be a serious business so far as America or England is concerned, although it is bad enough, but in India, if a 3-inch tap is left flowing day and night, it means a bill of Rs. 7-3-0, or Rs. 215-10-0 ($75) per month. It would seem, therefore, a good thing if some tap manufacturer could persuade Indian municipalities as to the special advantages of his make. If he succeeded, there is no reason why he should not drive a big trade in plumbers' goods with Bombay, Bengal, Calcutta, Madras, Delhi, Simla, Quetta, Agra and other places. The whole question of the water supply in Indian towns is a very important one, and any schemes that make for economy will be heartily welcomed by Indian municipal administrators.

CANADIAN MASTER PLUMBERS.

The annual convention of the National Association of Master Plumbers and Steam Fitters of Canada was held in Toronto last week. The early sessions were occupied with discussions of the proposed provincial associations to be composed of representatives of local associations, and to have representation in the National Association. The afternoon was occupied by a drive to points of interest in the city, and in the evening the delegates were dined. Among the speakers was Edward Gurney of the Gurney Heater Mfg. Company, who complimented the association on the prosperity it displayed.

On the last day of the convention, after inspection of the reports of the committees and the disposal of ordinary routine business, the following officers were elected:

President, John McKinley, Ottawa.

Vice-President, Frank Powers, Nova Scotia.

Secretary, H. A. Knox, Ottawa.

Treasurer, Joseph La Marche, Montreal.

Provincial Vice-Presidents, Nova Scotia, Cape Breton and Prince Edward Island, G. H. Perrier, Halifax; New Brunswick, James Walker, St. John; Quebec, John Wilson, Montreal; Ontario, W. Mansell, Toronto; Manitoba, Capt. Joseph Giroux, Montreal; British Columbia, James H. Wilson, Toronto.

The following chairmen of standing committees were appointed: Sanitary, J. W. Hughes, Montreal; Apprentices, Robert Ross, Toronto; Legislative, E. B. Butterworth, Ottawa; Essay, George Martin, Yarmouth, N. S.

The next convention will be held at Halifax.

Glauber Brass Goods.

A 140-page publication known as Catalogue D, 1901, recently has been issued by the Glauber Brass Mfg. Company of Cleveland, Ohio. The first page shows a picture of their offices and works, which during the past year have been increased by a new addition giving nearly three times the floor space heretofore available. A well arranged index and telegraphic code occupy several pages. The following 14 pages are devoted to Glauber's stop and waste cocks for iron and lead pipe with tee and lever handles, either separate or attached. The next few pages are devoted to hydrant cocks of various styles, followed by finished stop and waste cocks for making the various combinations of iron and lead pipe, some with coupling. Corporation cocks and curb cocks in a variety of styles occupy another section of the catalogue. Finished compression bibs, plain and hose bibs of different patterns adapted for lead and iron pipe for sinks and laundry trays, stop cocks, angle cocks and sill cocks are also shown in variety. Another section of the catalogue is devoted to Fuller work in plain and hose bibs for lead and iron pipe with flanges and thimbles, and in many special forms adapted to all kinds of special work.

These are followed by a variety of bath, basin and pantry cocks, all of the Fuller pattern. Compression basin cocks and compression double bath cocks with and without jewel and soap cups are also shown in great variety. Another section of the catalogue is occupied by a line of special fittings, such as basin cock supply pipes, couplings, slip joints, bath cock couplings, boiler couplings, trap screws, plain ferrules, basin clamps, basin cock fasteners, closet repairers, chain stays, plugs, Fuller balls, bib washers, floor gaskets for closets, hose couplings and band piyers. Another section is devoted to globe valves, check valves, service and steam cocks, air cocks, safety valves, oil cups and gauge cocks. The company claim that for quality of workmanship and excellence of design, finish and material their productions are entitled to consideration by all who cater to first-class work, and they invite a careful trial of their many specialties, feeling sure that the result will be to increase their trade.

The Henderson-Thermo Boilers.

A convenient addition to trade literature, particularly useful to those who sell and install the Henderson-Thermo steam and hot water heaters, has recently been issued by the Prizer-Painter Stove & Heater Company of Reading, Pa. The catalogue consists of 54 pages bound in a red cover on which there is an embossed design bearing the address of the house and showing their trade-mark and monogram. The first page is occupied by a picture of their manufacturing plant, and another page bears the statement, "We sell only to heating contractors." The next 20 pages are devoted to the company's heater for hot water systems, with views showing the completed heater and the heater partially erected, indicating both the fire and water travel and the detail of its construction, together with the company's special hot blast for promoting combustion, so that the merits of the heater may be readily understood. In connection with the very comprehensive explanation given in the text the advantages of the twin sections are presented, particularly when heaters of large size are to be installed. In the construction of the heater the parts to be handled by steam fitters are small and light and are readily carried in through the doors of buildings of any character.

The connections are made by means of slip nipples. The arrangement of the surface and the waterways is such as to promote combustion, facilitate circulation and secure the greatest efficiency from the fuel consumed. By the use of an upper crown sheet a very large fire surface is presented, a good portion of which is of a vertical character. Another feature of the heater is the construction of the base, which forms a continuous waterway on three sides into which the return pipes are connected, and the lower ends of the vertical sections which form the heater. This base is also used to sup-

port a rocking and dumping grate, designed not only to quickly clean the fire, but also to admit ample air supply to support combustion and to be capable of long service.

An interesting portion of the text is the information regarding the capacity of the heaters, the burning of the gases and the material of which the heaters are constructed. The various parts are made interchangeable, and ample facilities are provided for cleaning and draining the heaters. It is pointed out that, owing to the construction of the hot air blast running the full length of the fire chamber on each side at the surface of the fire no difficulty is experienced in operating these heaters with soft coal of fair quality. Their special adaptability for the requirements of the greenhouse heating trade is also explained. The heaters are made with grates 19, 28 and 41 inches wide, in 12 different sizes rated to carry from 625 to 5300 feet of radiation. Plates are presented showing elevation of the heaters with letters referring to a table which gives the complete dimensions.

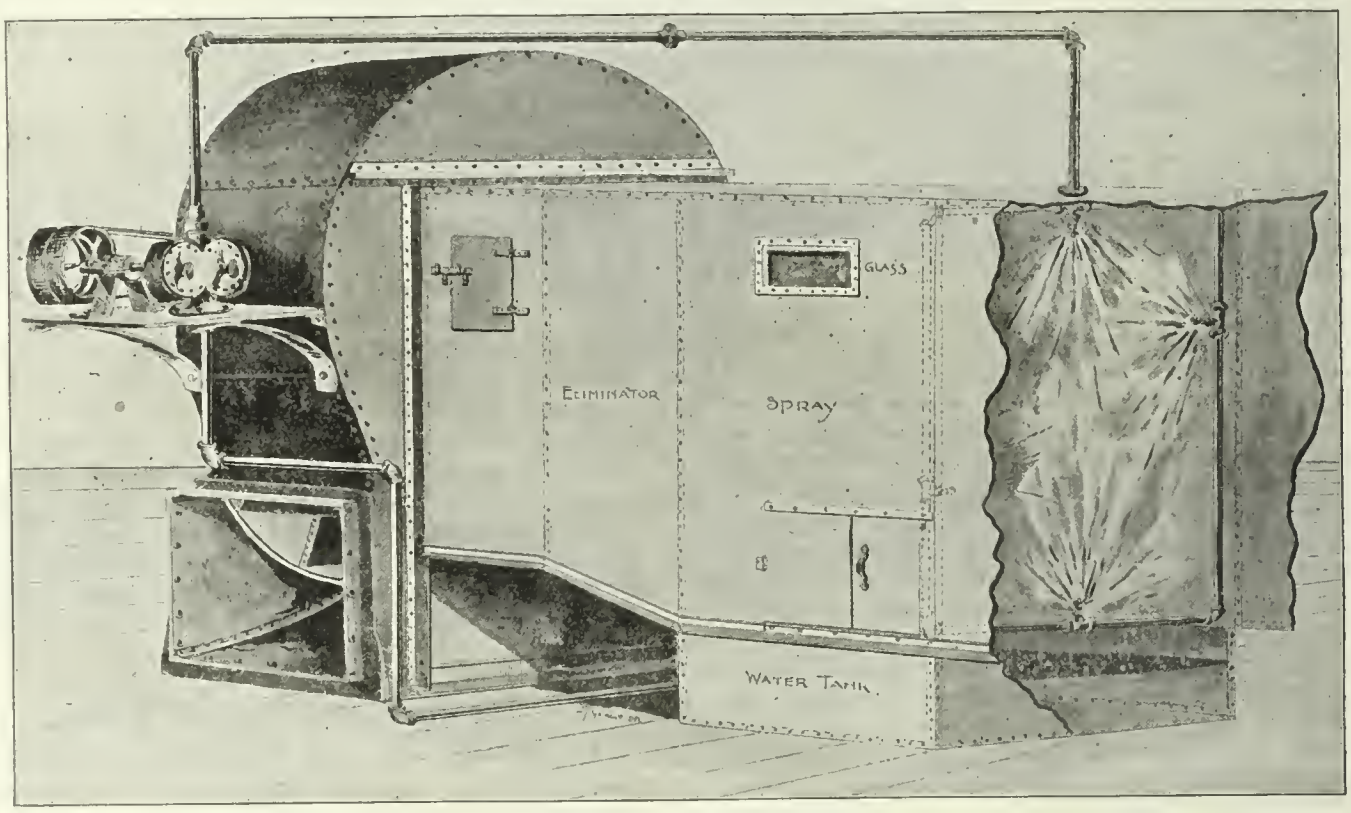


Fig. 1.—The Thomas Acme Air Washer and Purifier.

The latter portion of the catalogue is devoted to the company's steam heaters, patterns for which have recently been completed. These heaters are essentially the same in construction as the water heater, with the addition of a large steam chamber at the top. They are made in the same variety of sizes and are rated to carry from 375 to 3200 square feet of direct steam radiation. In connection with tables giving the dimensions, capacity and ratings of the heaters, there is a page explaining the method of rating the heaters and the allowances that must be made for the piping to the radiators. A well arranged telegraphic code is provided.

The Thomas Acme Air Washer and Purifier.

We herewith illustrate a new device manufactured by Thomas & Smith of 16 North Canal street, Chicago, and called Thomas' Acme air washer and purifier. The primary object sought by the inventor was the removal of dirt or other offensive and injurious matter from the air introduced into buildings by blowers or fans used for either heating or ventilating. The air after passing through the apparatus is not only clean and dry, but the impurities are eliminated, and a healthy degree of humidity is maintained irrespective of any outside hygrometric changes. The system has also simplified the question of cooling air in summer, as with a reasonable quantity of ice in the water tank the temperature of the passing air can be reduced many degrees. The apparatus consists essentially of a spray chamber and an eliminator. The spray pipe contains a number of nozzles set at regular distances. Between the two walls of the spray chamber is a suspended partition which causes the air to go under it, thus passing through the water from the nozzles, which are placed on one of the chamber walls at a level with the bottom of the partition. The air, thus passing through the water, is freed from some of the dirt or impurities, and then passes upward to the eliminator. This consists of a series of steel baffle plates, placed in alternating rows. When the air strikes the first row of plates it rebounds to the second, then to the third, &c., taking a circular motion, which retards the solid impurities left in it and deposits them on the baffles, sifting and drying the air. From the eliminator the air passes to the inlet of a fan. In winter tempering coils are used to keep the water from freezing. The fan then forces the purified air through the usual heating coils. All heavy particles, such as soot, dust, &c., are deposited at the bottom of the tank. The apparatus is stated to be very economical in the consumption of water, always ready to do its work and not liable to easily get out of order.

It has been installed in a number of important buildings in Chicago with gratifying results. A notable instance is the installation in the Chicago Public Library, which is located in a district surrounded by smoky chimneys, spice mills, coffee roasting establishments, &c. No odors are now observed in the building, and the books and papers are free from former accumulations of dust and soot.

THE AMERICAN RADIATOR COMPANY have recently improved the appearance of their new showroom at 40 and 42 East Twentieth street, New York, by tinting the walls a very pretty green and freshening up their samples of Steam and Hot Water Boilers and Radiators. Suggestions for the decoration of Radiators can readily be secured by looking over the samples displayed in the company's showrooms. Another attractive feature consists of large sized pictures of the manufacturing plants of the company, including the Standard, Detroit, Michigan, St. Louis, Steel, Pierce and Titusville plants. These views give a very comprehensive idea of the enormous capacity possessed by the company for producing Radiators.

THE BARNES MFG. COMPANY, Mansfield, Ohio, manufacturers of Single and Double Acting Iron Hand and Power Pumps and Cast Iron Sinks, are erecting an addition to their plant. The structure will be of brick and

stone, 30 x 60 feet, two stories, and will be used solely for office purposes. The company report an increasing demand for their goods, and they are now shipping their product to all parts of the globe. They have also largely increased their capacity by the addition of new machinery and have prepared a handsome new catalogue which is ready for distribution.

New York City Notes.

Business has been quiet for the past week, owing to the intense heat and the intervening holiday. Many of the trade took a run to the country and seashore to escape the heat, and none were over anxious in looking for new business.

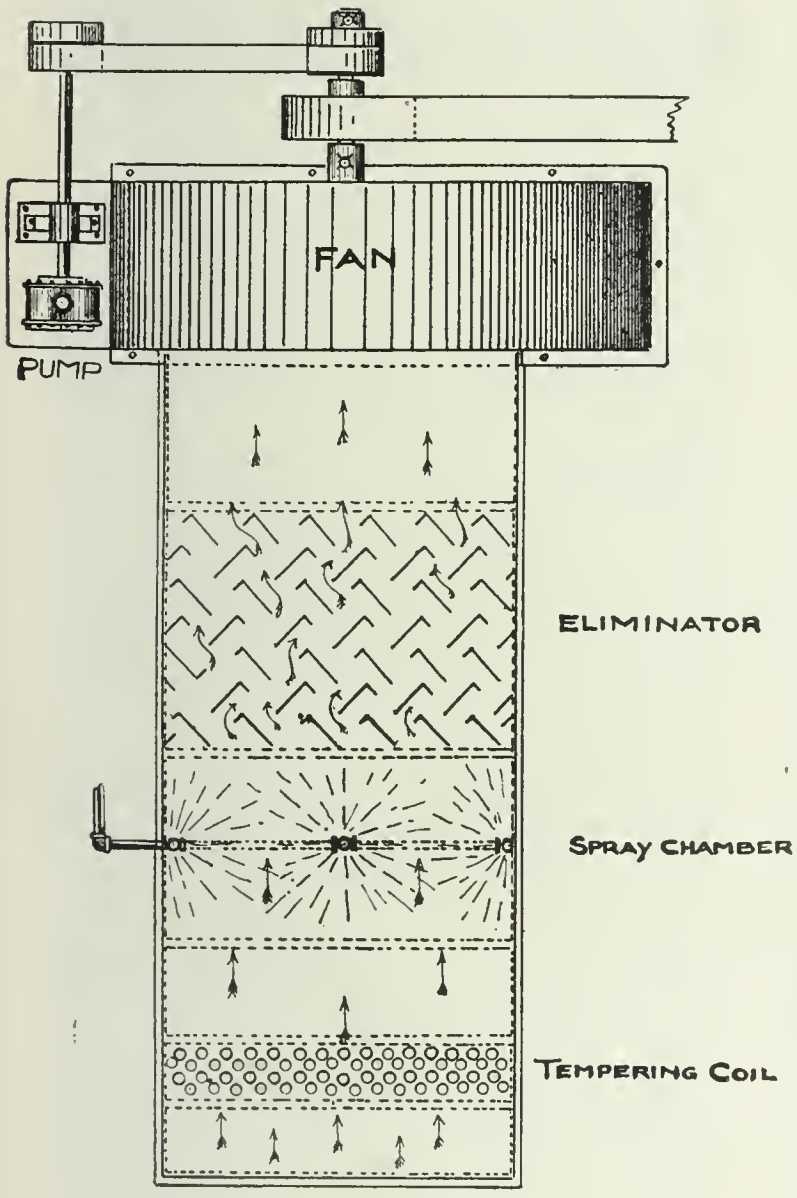


Fig. 2.—Plan.

* * *

Lyman & Costello are plumbing an apartment hotel that is being erected on Fifty-ninth street, running with an L to Park avenue, around the Board of Education Building.

* * *

Mr. and Mrs. I. J. Brown have just returned from an extended trip, which they took after the Kansas City convention, going all through Nebraska and as far as Denver.

* * *

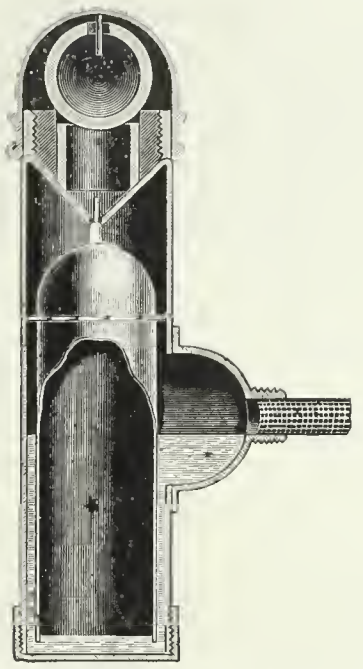
The heat has not deterred applicants for a certificate of competency from the Examining Board of Plumbers. The number of applicants each month keeps up the average, although many do not pass the examination who apply.

* * *

Selling material to finish stuck jobs is going on at times, but the lines are being drawn so close that all sorts of subterfuges have to be used to obtain the same, even so far as delivering the material at one place and then carting it away to where it is to be put in.

Air Valve for Vacuum Heating Systems.

In the accompanying illustrations we show some new air valves manufactured by Morgan & Co., 40 Dearborn street, Chicago, Ill., and designed for use in connection with low pressure and vacuum heating systems. It is pointed out that in this device the company have been enabled by the use of rubber to produce a



Air Valve For Vacuum Heating Systems.—Fig. 1.—Valve Closed.

valve which fits closely enough to establish and maintain a vacuum. The objection to the use of rubber in the construction of air valves is met by the fact that it is cheap and can be easily replaced. The construction provides a vulcanite cylinder, which has a sharp edge, against which a hollow rubber ball makes a seat. The vulcanite, softening somewhat under heat, obviates the sharp edge cutting the ball, while aiding in maintaining a perfectly air tight seat. In operation, the lower end of the float being in the well formed by the portion of the valve below the nipple connection, is sealed by the

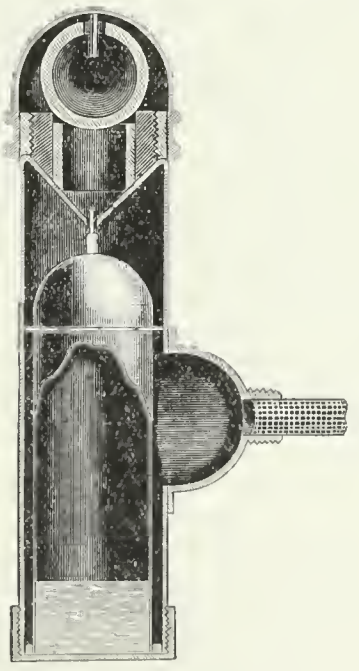


Fig. 2.—Valve Open.

water of condensation. The heat expands the air thus sealed in the float and raises the float to its seat, as shown by the sectional illustration given in Fig. 1. Should the pressure increase to the point of compressing the expanded air in the float, the water is forced into the float, keeping it pressed against the seat and the valve closed. As the pressure subsides the air that was compressed expands, forcing the water from the float into the well, and the float remains in the seat through flotation.

In absence of heat, the water in the well is drawn into the float, as shown in Fig 2, by the contraction of

the air in the float, and this water, adding its weight to the float, causes it to drop and leave the valve open. Any air that has been displaced from the float during the operation is replaeed by gravity as soon as the water in the well entering the float reaches the level of the bottom of the float. This is the action or principle whieh is depended upon to maintain an equilibrium. The expansion of air by heat is relied upon to make the operation of the valve in the highest degree sensitive. The swell between the nipple conneetion and the body of the valve prevents capilliary attraction, rendering unnecessary the use of a siphon or double passage through the nipple. The screen at the end of the nipple is of brass gauze, and is designed for the purpose of maintaining a steady water line in the valves, irrespective of an irregular water line in the radiator, due to carelessness in the manipulation of the radiator valves. The flange on the float above the inlet of the valve serves to raise the float quickly to its seat and close the valve in case of a rapid inflow of water from the radiator. The pin at the top of the float is made of German silver, and so constructed as to prevent the pin from becoming stuck in the seat and keeping the valve closed when it should be open. Morgan & Co. issue an attractive catalogue, giving illustrations and full description of the constructiou and operation of the valve. This publication can be secured on application.

Heating and Plumbing Notes.

A. H. Warner and C. C. Spellman, assignees of the E. Stebbins Mfg. Company, Springfield, Mass., advise us that the information given in an item published in these columns on June 22 in regard to the indefinite closing down of the company's plant at Brightwood, Mass., was incorrect. The works were only closed for two days in order to make the necessary inventory. The company's plant is now rnnning with full force and with no prospect of a suspension of operations.

Two interesting little pamphlets are issued by the F. W. Foster Mfg. Company of 6 Portland street, Boston, Mass., one of which is devoted to the Foster Shaking Grates for steam power boilers, adapted to square and round fire chambers and to all sizes and kinds of fuel. The different styles of Grate and the method of applying them are shown by means of the illustrations. The pamphlet also gives a list of large steam power plants and public buildings in which these Grates are giving satisfactory service. The other pamphlet, entitled " The Kind That Never Leak," is devoted to the Foster Ball Cock, which is adapted for water closet flush tanks as a float valve for working under either high or low pressure. It is also used in conneetion with a boiler feeder to keep the water line in the boiler always at the same hight. The device is further shown in connection with a water gauge box, so that the gauge glass will always show the water liue maintained by the boiler feeder. This catalogue should be of interest to both plumbers and heating contractors.

Swing & Bateman, Philadelphia, have a $4000 contract for installing a steam heating plant at 1207 Walnut street, for the Central Realty Company.

The Allegheny Heating Company of Pittsburgh, Pa., have declared the regular qnarterly dividend of 3 per cent. and an extra dividend of 5 per cent., payable July 25.

The Reineke-Wilson Company, Pittsburgh, Pa., are sending to the trade a 12-page folder relating to the various kinds of goods which they manufacture. One page is devoted to their special catalogues. Catalogue 27 is occupied by a complete line of Pumps and Pump Appurtenances. Catalogue 16 is for Hose and Hose Reels and Brass Goods. Catalogue 20 shows Gas and Electric Lighting Fixtures. Catalogue 24 is devoted to Gas Stoves, Gas Burners, Fittings and Supplies. Catalogue 25 shows Gas Lamps, Acetylene Lamps and Glassware for incandescent and acetylene lighting. Catalogue 26 contains Gas Ranges, Hot Blast Water Heaters and Gas Cooking Appliances. Catalogue 23 is devoted to Gas Heating Stoves, Radiators, Fire Place and General Gas Heating Appliances. Catalogue 28, which is in eourse of completion and will be issued about August 1, will show a new line of Gas Chandeliers and Lighting Goods.

Gunster & Forsyth, Scranton, Pa., have recently contracted to do the plumbing, gas fitting, steam heating, copper cornice and dome, and skylight work in the new Merehants' and Meehanics' Building, Scranton. The firm have at present work engaged that will employ them for the balance of this year.

George A. Cranford & Co. will occupy one of the stores in the new three-story brick building on Main street, Mount Desert, Maine, with their plumbing shop and showroom.

Allen H. Tyler, 244 Putnam street, Collinwood, Ohio, clerk of the Board of Education, will receive bids until July 24 for heating and ventilating a four-room school building.

Runyon & Ogden, Binghamton, N. Y., were the lowest bidders, at $13,917, for heating and ventilating the new Fredonia Normal School.

At the meeting of the Association of Manufacturers and Jobbers in Plumbing Supplies held recently in Detroit, a resolution was adopted to the effect that on and after July 1, 1901, all members of the association would charge for boxing and packages. Copies of this resolution have been sent out by Secretary C. W. Woodward to the plumbing trade at large.

C. A. Ludden of Chicopee, Mass., has the contract for a heating plant in the addition to the Town Hall at Springfield, Mass.

C. K. Fankhauser has been elected president of the National Steam Economizer Company, Springfield, Mass., to sueeeed R. H. Smith, who resigned the position. The company make a specialty of the Keller apparatns for utilizing exhaust steam and their apparatus is in use in some of the largest steam plants in the country.

The Master Plumbers' Association of Syracuse, N. Y., have locked out about 200 journeyman plumbers, members of the local union, because of their alleged inconsistent demands. The rules of the union restrict members from riding a bicycle to and from work, between the hours of 8 o'elock to noon, and from 1 o'clock to 5 p.m., also from working more than seven hours on Saturday. The journeymen assert that they are willing to use any kind of vehicle other than a bicycle in going to and from work, saying that they cannot afford to buy bicycles and keep them in repair.

The plumbers of Spokane, Wash., have demanded the resignation of some of the men appointed to act on the City Examining Board of Plumbers, and have recommended other men for appointment in their places.

The Atlanta Steam Company of Atlanta, Ga., have a contract for removing the old heating system from the Custom House in that city, and substituting a new low pressure steam apparatus.

James T. Murray, Hartford, Conn., is installing two boilers and overhauling the heating system in the Ætna Life Insurance Building in that city. He also has a contract to place two large tubular boilers in the Hartford Hospital.

Libby & Blinn, Hartford, Conn., have a contract for removing the old and putting in new steam heating apparatus in the new City Hotel, and are installing a ten-section Mercer hot water boiler in the six-tenement block of W. W. Evans, in that city. They have just completed alterations of the entire heating apparatus in the Bliss Block, and are rearranging the hot water system in the residence of Caroline E. Day, using two Cottage boilers. The firm also have been awarded the eontract for heating the four-story warehouse and three sweat room erected by Sutter Brothers, using a 13-section No. 3 Mercer steam boiler.

The strike of the plumbers at Grand Rapids, Mieh., has been called off by Vice-President Saeger of the International Union. The master plumbers have agreed to pay $3 a day of nine hours, with the privilege of hirlng either union or nonunion men, as they might prefer. The

chief point of the strike was for the recognition of the union.

FRANK J. PAGE, who is well known to the heating trade, is now visiting the steam and hot water fitters in the interest of the Richmond Stove Company of Norwich, Conn.

THE GURNEY HEATER MFG. COMPANY of Boston have engaged J. S. Matson to look after the interests of the Gurney Steam and Hot Water Boilers and Radiators in Eastern Pennsylvania and Philadelphia.

EDWIN CONNELL, 113 Pearl street, Somerville, Mass., has recently enlarged his plumbing establishment to meet the demands of his rapidly increasing business.

DANIEL FARREL of Anniston, Ala., bid $7445 and was the lowest bidder for heating the City Hall at Birmingham. The Peck-Hammond Company of Cincinnati bid $5040 and were the lowest bidders for the plumbing work.

JAMES B. CLOW & SONS, Chicago, Ill., have purchased the entire plant, including machinery and stock, of the Cuyhoga Marble & Stone Company, Cleveland, Ohio. The whole outfit will be moved to Chicago for the enlargement of their marble mill there.

THE DEMPSTER MILL MFG. COMPANY, Beatrice, Neb., manufacturers of Wind Mills, Pumps, Tanks, &c., are enlarging their plant by building additions to the machine shop and foundry, and by the erection of a new complete galvanizing plant for galvanizing Wind Mills and Wind Mill material. The cost of the additions, with the new machinery which will be installed, will be about $20,000, and the capacity of the machine shop and foundry will be increased about one-third.

G. B. GAYLORD, manager of the American Supply Company, of Springfield, Mass., has received official notice from Washington that his application for letters patent on Float Actuated Valves has been allowed. Mr. Gaylord intends to have his company incorporated and with increased capital add to the present business of dealing in Plumbers' and Tinners' Supplies that of manufacturing and handling the new Valve.

MICHAEL HEERY of Topeka, Kan., has secured a $10,524 contract to heat the State House in that city.

THE long drawn out strike of the Detroit plumbers is ended. The men went out two months ago upon the refusal of the employers to recognize the union scale and union hours, and the fight has been a bitter one. The employers imported a few men, but as a rule were compelled to don overalls themselves and get down to hard work to take care of their orders. They held out the longest and on June 27 the strikers held a meeting and accepted the terms of the employers, so that all returned to work at the old wages.

THE ENGINEERING & STEAM SUPPLIES COMPANY have filed articles of incorporation at Minneapolis, Minn., The incorporators are Hubert Kelly, E. G. Walton, John N. Smith, B. M. Kelly, M. F. Byrnes, all of Minneapolis. The capital stock is $25,000.

THE LOCKE & SMITH COMPANY of New York City have been incorporated, with a capital of $60,000, to manufacture Plumbers' Supplies. The directors are H. M. Smith, William E. Lawton and A. J. Davidson of New York City.

IN the report of the annual meeting of the International Acetylene Association, held in Buffalo, in *The Metal Worker*, June 22, the name of the Abner Acetylene Gas Company of Chicago was omitted from the list of those present. It might have been thought that the omission was purposely made to render their name more conspicuous by absence, but, as a matter of fact, it was omitted by pure and unintentional accident.

New Firms and Changes.

A CHARTER has been granted to the Davidson Heating & Construction Company of Hanover, Pa. The directors are McC. Davidson, D. D. Ehrhart and C. E. Ehrnart and the capital stock is $15,000. P. M. Weist is treasurer of the concern.

THE CENTRAL SUPPLY COMPANY have been incoporated, at Worcester, Mass., with I. P. Smith as president and J. P. Ashey as treasurer, to deal in Steam Fitters' Supplies and Plumbing Goods.

THE NATIONAL PLUMBING & HEATING COMPANY have been incorporated, at Milwaukee, Wis., by G. C. English, G. Boemer and John H. Boemer, with a capital stock of $2000, to do a general plumbing, gas fitting and steam heating business.

BATEMAN & O'BRINE are a new firm in the plumbing business at Concord, N. H.

THE SELLNER GAS & ELECTRIC FIXTURE MFG. COMPANY of St. Louis, Mo., with a capital stock of $25,000, have been incorporated by Albert C. Sellner, William A. Gardner, Herman Goodman and others.

THE NEW JERSEY SANITATION COMPANY, 15 Exchange place, Jersey City, have been incorporated, with a capital of $125,000, to deal in Sanitary Supplies. Patrick H. Connolly, Wm. J. Davis and John F. Reilly are the incorporators.

MILLINGTON & MILLER, 113 Kossuth street, Bridgeport, Conn., have succeeded to the heating contracting branch of the business of the Bridgeport Steam Heating Company. The old company will confine their business to the jobbing of supplies and to high pressure installations.

International Exhibition of Modern Art Products.

We have received from General L. P. di Cesnola, director of the Metropolitan Museum of Art of New York city, a copy of the programme for the first International Exhibition of Modern Decorative Art, which is to be held in the City of Turin, Italy, in the year 1902. General di Cesnola, who is Commissioner-General of the exhibition for the United States, is anxious that American manufacturers engaged in the lines which will be represented should be made aware of the favorable opportunities offered in connection with this enterprise for the exhibition and introduction of their goods into foreign countries. The undertaking is under the patronage of the King of Italy, and his cousin, the Duke d'Aosta, is president of the same. In connection with the programme, the statement is made that the exhibition is not to be merely a reflection of other industrial exhibitions so often repeated, neither is it intended to show reproductions of styles already known, nor simply industrial productions that are wanting in artistic merit, but it is opened solely to original productions tending to the improvement of the artistic form in modern decorative art. The departments which will be of more especial interest to our readers are those of warming apparatus and accessories, such as stoves, registers, fire dogs, fire guards, &c., lighting apparatus of all kinds, and metal work, engraved, embossed, beaten or cast. These are included in the first class of exhibits under the general heading of "The Modern House and Its Decorative Elements." Information regarding the proposed exhibition can be obtained either from General di Cesnola, Metropolitan Museum of Art, Central Park, New York city, or from the Exhibition Committee, 28 Via Ospedale, Turin, Italy.

The *Journal* of Kennebec, Maine, says that the carpenters of that region 100 years ago and more were in the habit of using birch bark in place of sheathing paper in the erection of the better class of dwelling houses. While overhauling some houses in Saco recently it was found desirable to pull off some of the clapboards, underneath which were found what appeared to be loose pieces of birch bark. On further investigation the carpenters found that when the house was built, in 1782, sheets of birch bark were laid on the sheathing to close over the cracks. These sheets were held by small hand made nails of wrought iron, over which were laid clapboards of pumpkin pine. This sheathing material was found to be in an excellent state of preservation.

According to the figures of the Department of Buildings of New York City, there are 60,502 street lights maintained in the city, including 40,628 gas lamps and 15,682 electric lights.

The Tin Plate Scale.

At a meeting of the tin plate wage committee of the Amalgamated Association, and J. Warner Arms, representative of the American Tin Plate Company, held in Cleveland last week, the scale fixing wages for tin plate mills for the year beginning July 1 was arranged. The men received a slight advance on gauges 21 to 28 inclusive, while the catchers also got an advance of about 10 per cent. Some concessions were also made in the footnotes and material changes in clause No. 6 in the old scale, but from No. 5 in the new scale, were made. The new scale in full is as follows:

The Tin Plate Scale.

Gauges.	Roller.	Doubling.	Heating.	Catcher.	Shearing on jaw or crocodile shears, and job or sheet work.	Shearing tin plate on squaring shears.	Screw boy.
8 to 11	$1.71	$0.97	$0.98	$0.59	...	...	...
12 and 13	1.97	1.00	1.03	.62	$1.26	...	...
14 and 15	2.07	1.16	1.23	.71	...	$0.41	$0.60
16 and 17	2.77	1.58	1.52	.95	...	...	...
18 to 20	3.10	1.77	1.70	1.06	1.44	...	...
21 to 24	3.72	2.19	2.02	1.17	...	.50	.73
25 and 26	3.94	2.30	2.22	1.24	1.31	.51	.80
27 and 28	3.99	2.43	2.40	1.25	1.22	.53	.81
29 and 30	4.19	2.76	2.68	1.43	1.01	.52	.81
31	4.28	2.91	2.86	1.45	.97	.55	.82
32	4.47	3.06	3.01	1.52	1.00	.55	.84
33	4.76	3.22	3.10	1.60	1.03	.59	.86
34	5.29	3.44	3.39	1.78	1.20	.61	.89
35	5.54	3.62	3.60	1.88	1.20	.63	.99
36	5.91	3.72	3.74	2.00	1.25	.66	1.02
37	5.99	3.76	3.79	2.02	1.21	.68	1.05
38	6.05	3.84	3.85	2.05	1.17	.70	1.06
39	6.38	4.22	4.14	2.16	1.29	.72	1.07
40	6.72	4.77	4.83	2.27	1.33	.75	1.11
41	6.90	5.01	5.06	2.32	1.40	.76	1.14
42	7.08	5.23	5.29	2.38	1.45	.77	1.17
43	7.25	5.46	5.52	2.44	1.49	.78	1.21
44	7.43	5.69	5.75	2.50	1.55	.79	1.24

FOOTNOTES.

1. Twenty (20) per cent. added for changed iron and steel.

2. Seventeen (17) per cent. added for pickle finished iron and steel, except shearman.

3. All iron or steel rolled on tin or black plate mills sheared to patterns of irregular shapes or circles, shall be paid for at the weight of the square sheet.

4. All plates and sheets cut down to smaller sizes of tin plate mills to be paid for at scale prices.

5. That all sheets or tin plates 14 square feet and over, when finished in six or more sheets to the pack, shall be paid for at the following rates above tin plate scale: 10 per cent. extra on 26 gauge and heavier, and 20 per cent. for all lighter gauges up to and including 32 gauge, and for all sheets or tin plate 15½ square feet and over, finished in fours, the same percentage shall apply, and it is understood that when plates worked on a tin mill less than the above superficial square feet are not first pickled, annealed, cold rolled and thoroughly treated as plate for tinning purposes before leaving the mill where they are worked, the above percentage shall apply. This does not include shearman, as his wages for sheet work is based on jaw or crocodile work. All black plate orders to be marked on the bar when brought to the mill.

6. Where improved squaring shears are used the company shall pay for opening packs and grinding the knives, and on jaw and crocodile shears the company to pay for opening packs, and in mills where plates are cut into 14 x 20 inches or smaller sizes, additional pay shall be arranged as follows: For four (4) or five (5) cuts, 10 cents per ton above scale price shall be paid, and 5 cents per ton additional for each extra cut thereafter.

7. Eight (8) hours shall be a day's work on tin or black plate mills, said mills not to follow out, only on Friday and Saturday, when a full turn's work shall not be made in less than seven (7) hours, when due notice shall be given of such change.

8. It is agreed that no more than three changes in the classification of sheet and tin plate mills can be made during the scale year, and due notice shall be given before such changes.

9. The weight of the bar to be marked on the bar when brought to the mill, and scales for weighing bars be furnished.

10. In each tin mill a blackboard shall be furnished, on which the complete weight of each turn shall be placed within a reasonable time after being made.

11. All tin and black plate shall be weighed by the company after being sheared and opened.

12. That the company furnish soft grease on Monday and any other warming up turns.

13. That all men working under the control of the Amalgamated Association shall not wait in the mill longer than three (3) hours without working.

14. Three (3) turns to constitute a day's work for shearman, except in case of accident or other contingencies.

15. Where a shearman feeds his own pack no deduction shall be made from his wages. When the scrap boy feeds the pack, 10 cents per turn shall be deducted, except in cases where mill construction or placing of shears prevents.

16. That all mills working iron or steel over 32 inches wide be classed as large mills, and ten (10) per cent. extra shall be paid for all such widths over 32 inches wide up to 35 inches wide; for 35 inches wide and over, containing less than 14 square feet, 20 per cent. extra shall be paid.

17. All crop ends shall be paired in equal lengths and, when possible, equal weight.

18. The standing turn and level hand men on tin mills shall receive their money direct from the company.

19. That ten (10) per cent. extra shall be paid for spreading bars.

20. That all iron and steel worked on tin mills, finished in eighths heavier than 27 gauge, be paid for at the same rate as 27 gauge.

21. That there shall not be any making up of lost weight on tin or black plate mills on a turn where crews are obliged to follow out or give up the mill in less time than seven hours.

22. That all cut downs be marked separately on board.

23. That where they have patent feeders on shears, the shearman to be paid 10 cents per turn extra, and shearmen shall not use wrench or any other implement to assist feeder in its work, except it be operating treadle. Eight hours shall constitute a day's work for shearmen.

OUTPUT SAME AS LAST YEAR.

1. Where 28 gauge is worked, in six or eight sheets to the pack, 6150 pounds shall be the limit.

2. On sizes 20½ x 56 an excess of 5 per cent. may be made, but on sizes less than 20 inches wide the per cent. cannot be made.

3. Turns below the limit may be made up during the same week for that week, but in making up lost weight on any turn, the output shall not exceed the limit over 500 pounds on 31 gauge and heavier, and 250 pounds on lighter gauges, and, when the drawback is made, the percentage excess cannot also be made on same turn.

4. When a turn's work is made within fifty (50) pounds of limit, it shall be considered a full turn, and the company cannot insist on the making up of said shortage.

The base weights to remain as in scale book, with the exception of 30 and 31 gauge minimum, which shall be 101 and 91 respectively.

THE E. W. BLISS COMPANY, Brooklyn, N. Y., have prepared a neat little pamphlet for distribution at their exhibit at the Pan-American Exposition, Buffalo, N. Y., which illustrates some of their leading lines of Presses, Dies, Shears and Sheet Metal Working Machinery. A view of the company's big machine shops is given, and the statement is made that their forge shop is now completed and that they are prepared to correspond with those who desire Die or other Forging of the highest order.

The Sheet Mill Situation.

On Saturday, June 29, every sheet mill owned by the American Sheet Steel Company shut down for an indefinite period, owing to the fact that the American Sheet Steel Company refused to sign the Amalgamated scale for the sheet steel mills at Wellsville, McKeesport, Kirkpatrick mills at Leechburg, Scottdale Iron & Steel Company at Scottdale, and the Apollo Mills at Vandergrift. At a conference of the wage committees representing the American Sheet Steel Company and the Amalgamated Association, held in Pittsburgh on Saturday, June 29, the sheet scale was satisfactorily arranged until it came to the signing of it. Persifor F. Smith, who represented the American Sheet Steel Company, absolutely refused to sign the scale for the five mills named above, claiming that they were nonunion, had been for years, and that it was unfair of the Amalgamated Association to ask that the scale be signed for these mills. On behalf of the Amalgamated Association, Theodore J. Schaffer, president, stated that employees of union mills would not be allowed to work until the scale had been signed for all the mills owned by the American Sheet Steel Company. The question at issue, therefore, is not one of wages, but of recognition of the Amalgamated Association in nonunion mills of the American Sheet Steel Company.

Before the American Sheet Steel Company were organized a number of the most important sheet mills in the country ran nonunion and had done so for many years. Among those were the plants of the Apollo Iron & Steel Company at Apollo and Vandergrift, the W. Dewees Wood Company at McKeesport, the Wellsville Plate & Sheet Steel Company at Wellsville, Ohio; the Scottdale Iron & Steel Company at Scottdale and the Kirkpatrick Company of Leechburg. After the American Sheet Steel Company were organized the officials of the Amalgamated Association at once went to work to organize lodges among the employees of the plants named above, and succeeded in getting a great many of the employees of the W. Dewees Wood Works at McKeesport, the Apollo at Vandergrift, the Kirkpatrick Mills at Leechburg and the Scottdale Mills at Scottdale to affiliate themselves with the Amalgamated Association.

It will be recalled that two or three months ago labor troubles broke out in the W. Dewees Wood Company Works at McKeesport, but the matter was arranged by the Amalgamated Association agreeing to allow the mill to be operated as before until the expiration of the scale year, on June 30. The Amalgamated Association evidently intends to strengthen its position among the sheet mills, by attempting to make all the mills of the American Sheet Steel Company union. Whether this can be done remains to be seen. It is a fact, however, that the trouble among the sheet mills comes at an unfortunate time for the American Sheet Steel Company, as the demand for black and galvanized sheets is enormous and has filled the mills up with tonnage for the next three or four months. At the present time there is not a sheet mill owned by the American Sheet Steel Company in operation, but it is possible the trouble, which now has a very serious aspect, may be fixed up before this week is out. Neither side desires a long conflict, but, if respective positions are maintained, the sheet mills promise to be idle for an indefinite time.

The mills outside of the American Sheet Steel Company in the Central West which can be operated are those of Zug & Co., Limited, of Pittsburgh; the Whitaker Iron Company at Wheeling, W. Va.; the Wilkes Rolling Mill Company at Sharon, Pa., and the Niles Iron & Steel Company, Niles, Ohio. The last named concern completed their works only a short time since and are operating a three-mill plant. Zug & Co. have six mills, the Wilkes Rolling Mill Company two mills, and the Whitaker Iron Company six mills. However, most of the output at the latter concern is used by the Wheeling Corrugating Company, an identified interest. It will be seen, therefore, that if the shut down of the sheet mills should continue for a prolonged period there would be a famine in sheets. There has been an enormous consumption for months, and stocks in the hands of jobbers all over the country are very low. In the meantime those having sheets to sell will probably either hold off, or else quote very much higher prices. In the East are quite a number of sheet mills that do not sign the scale and these will be operated right along, and, of course, will profit by the suspension of the mills in the West.

T. J. Shaffer, president of the Amalgamated Association, has given out the following statement relating to the trouble with the sheet mills:

"Much as I regret to make the statement, I must say that it seems to be a premeditated blow at organized labor. In the first place, Persifor F. Smith, who had absolute authority for the sheet steel combine in our conference, has for the last 20 years been one of the strongest advocates of nonunion labor. I will do Mr. Smith the credit, however, to say that he acted fairly and above board with us.

"It is but fair that the people should know the inside doings of the Saturday conference. When Mr. Smith presented to us an impossible proposition regarding those two mills, a proposition which he knew was impossible, I saw the trend of affairs. I told him it was 20 years since he had begun personally to antagonize the Amalgamated Association and union labor, and asked him whether the association was not much better and more worthy of consideration now than then. He admitted such was the case. I asked if it were not true that he had the opinion that the nonunion mills working at a lower rate of wages were in more satisfactory condition than the union mills. If this was the case I wanted to open the subject to debate, but Mr. Smith absolutely refused to debate the matter at all. He refused to do anything, but insisted that the Old Meadow and Saltsburg plants be eliminated from the union scale. Nothing was said about the McKeesport plant. This left me no alternative, so I simply said to Mr. Smith:

"'As representative of the American Sheet Steel Company you have thrown down the gauntlet to organized labor, and as president of the Amalgamated Association I now take it up. It will be a fight to the finish.'

"So far as I can see, there is no possible chance for another conference. Certainly we will not consider any such absurd proposition as that offered by Mr. Smith. I had hoped there would be no trouble between the workmen and the employers, but they have forced it. I have been abused many times by those I thought my friends because I did not go out and stir up trouble, for there are those who hate peace. I will now say what I said to Mr. Smith in the conference, 'If it is to be a strike, we will make it one to be remembered.' The officials now dealing with us have but little idea of the extent to which this strike will go, once on."

The mills owned by the American Sheet Steel Company, and which have closed down on account of the trouble, are as follows:

Ætna-Standard Iron & Steel Company, Bridgeport, Ohio.
Apollo Iron & Steel Company, Vandergrift, Pa.
Cambridge Iron & Steel Company, Cambridge, Ohio.
Canton Rolling Mill Company, Canton, Ohio.
Chartiers Iron & Steel Company, Carnegie, Pa.
Chester Rolling Mill Company, East Liverpool, Ohio.
Corning Steel Company, Hammond, Ind.
Coshocton Rolling Mill Company, Coshocton, Ohio.
Dennison Rolling Mill Company, Dennison, Ohio.
Dresden Iron & Steel Sheet Company, Dresden, Ohio.
Falcon Iron & Nail Company, Niles, Ohio.
Hyde Park Iron & Steel Company, Hyde Park, Pa.
Kirkpatrick & Co., Leechburg, Pa.
P. H. Laufman & Co., Paulton, Pa.
Midland Steel Company, Muncie, Ind.
New Philadelphia Iron & Steel Company, New Philadelphia, Ohio.
Old Meadow Rolling Mill Company, Scottdale, Pa.
Pittsburgh Sheet Mfg. Company, Shousetown, Pa.
Piqua Rolling Mill Company (Cincinnati Corrugating Company), Piqua, Ohio.
Reeves Iron Company, Canal Dover, Ohio.
Republic Iron & Steel Company's sheet mills, outside of Alabama.
Saltsburg Rolling Mill Company, Saltsburg, Pa.
Scottdale Iron & Steel Company, Scottdale, Pa.
Struthers Iron & Steel Company, Struthers, Pa.
Sharon Iron Company, Sharon, Pa.
W. Dewees Wood Company, McKeesport, Pa.
Wellsville Plate & Sheet Iron Company, Wellsville, Ohio.
West Penn Sheet Steel Company, Leechburg, Pa.

The above plants contain from 275 to 300 sheet mills, and their output is between 2000 and 2500 tons of sheets per day.

SHARON TIN PLATE COMPANY.

The Sharon Tin Plate Company of Sharon, Pa, are a constituent interest of the Sharon Steel Company, and were organized a short time after active work was started on the Sharon Steel Company plant. The original tin mill was designed to contain ten mills, and before these were finished the entire product of tin and terne plate was sold to the American Tin Plate Company for a term of five years, the price to be the regular market price of tin plate. This is probably the first case in the manufacturing business where the concern have been able to sell their prospective entire output at a very high price and for a period of years. This contract was made in order that the output of the Sharon Tin Plate Company would not come in competition with the American Tin Plate Company. A short time before this contract was made with the American Tin Plate Company the Sharon Tin Plate Company decided to double their plant by the building of ten more mills, and these are actively under way and will probably be ready for operation in the latter part of the year.

The hot mill building is 900 feet long by 108 feet wide and is equipped with two 20-ton electric cranes. All doubling and squaring shears are run by electric power. This building contains ten 26-inch hot tin mills, which are completed and running, and ten more building. Of these mills one has rolls 34 inches wide, one 36 inches wide, eight 32 inches wide, while the ten that are building will be 30 inches wide. The furnaces completed are 12 sheet furnaces and ten pair furnaces. There are also ten additional sheet and ten additional pair furnaces in course of erection. These furnaces are all fired with producer gas. Power for the first ten mills is furnished by a Buckeye compound condensing engine, furnished by the Buckeye Engine Company, Salem, Ohio. Power for the second ten mills will be furnished by a compound condensing engine, furnished by Mackintosh, Hemphill & Co. of Pittsburgh. The steam for these mills will be furnished by five 400 horse-power Wheeler boilers in boiler house No. 1, and three of the same type in boiler house No. 2, all furnished by the Wheeler Boiler Company of Sharon, Pa.

The cold mill is 520 feet long by 88 feet wide and is equipped with five annealing furnaces, and one building of 50 tons capacity for 12 hours. These furnaces will be equipped with Swindell chargers and one 20-ton crane. There are 13 stands of cold rolls, 12 driven tandem and one for one-pass 24-inch rolls.

The black pickling room is 72 x 90 feet in size, and is equipped with two Mesta pickling machines, furnished by the Mesta Machine Company of Pittsburgh. The white pickling room is 72 x 128 feet and is equipped with one Mesta machine. The tin house is 72 x 212 feet and is equipped with 24 sets of doubling machines. The assorting room is 72 x 128 feet. Warehouse No. 1 is 160 x 72 feet. Warehouse No. 2 is 160 x 72 feet. Machine shop 60 x 60 feet and blacksmith shop 40 x 60 feet. There is a power house 80 x 40 feet equipped with two 250 horse-power Buckeye cross compound engines, direct connected to two Westinghouse generators of 200 kw. each.

The tin bars used in the mill are brought over by track from the tin bar mill of Sharon Steel Company and are taken direct to the reheating furnaces. The entire tin mill from beginning to end has modern equipment throughout, and the process of making tin and terne plate is continuous, there being no rehandling of material whatever.

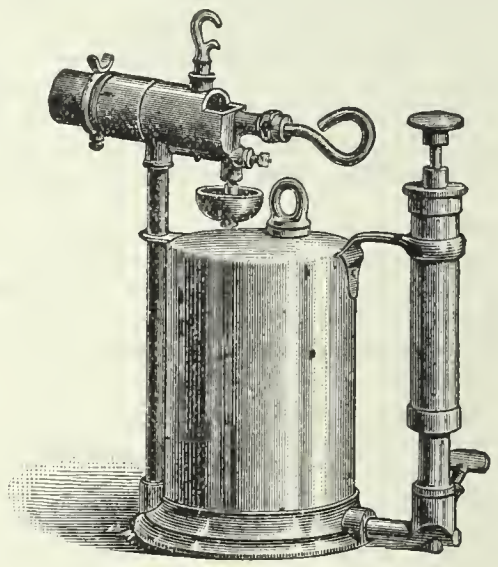
ED. S. BURGESS, president and general manager of the Burgess Soldering Furnace Company, Columbus, Ohio, left on July 2 for a ten weeks' sojourn at his summer residence, located on Columbus Beach, Indian River, Mich., where the latch string will always be out for any of his friends who may be within 50 miles of the place during that interval.

The Parkersburg Iron & Steel Company.

The Parkersburg Iron & Steel Company, whose general offices are in the *Times* Building, Pittsburgh, are making good progress in the work of erection of their four-mill sheet plant, at Parkersburg, W. Va., and expect to have it in operation in September or October. The main building is 120 feet wide by 450 feet long, which will accommodate a 12-mill plant, the concern expecting to increase to that number of mills in the near future. The four mills will be driven by a 32 and 58 by 60 cross compound Corliss engine, furnished by the Bass Foundry & Machine Company of Ft. Wayne, Ind. The firm are also installing four Wood direct fire 250 horse-power boilers and one Cahall 250 horse-power waste heat boiler. There is already in operation at the plant a Skinner engine and Bullock dynamo of 100 kw. capacity, which operates a Pawling & Harnischfeger electrical traveling crane. This dynamo also furnishes the motor power and light necessary for the operation of the plant. The boilers are to be shipped this week, and the high pressure cylinder for the engine is on the way, as well as the four mills. In addition to the main building there is a bar mill building 63 x 100 feet and a boiler house 63 x 90 feet. The firm will install a bar mill and roll their own sheet bars. The plant will be equipped with entirely new machinery with very few exceptions, and labor saving machinery throughout, and is expected to be a modern up to date sheet plant. The initial capacity will be from 12,000 to 15,000 tons per annum and the product will consist of the finer grades of sheet iron for stamping purposes and specialties.

The Quick Meal Paint Burner.

The Ringen Stove Company, 410 to 414 North Sixth street, St. Louis, Mo., have just brought out the Quick Meal paint burner or painters' lamp, of which an illustration is shown herewith. The main features to which special attention has been given are simplicity and durability, combined with a low price. The body of the tank is constructed of heavy brass drawn out of one sheet, which makes it very strong. The bottom is composed of cast brass securely fastened to the body. All parts are made of brass except the pipe leading to the burner. The air pump is contained in the handle and is of exceedingly simple construction. An air valve below the pump confines the air in the tank after being pumped up. The handle of the needle valve is formed in the shape of a loop. When hot it may be operated by inserting through the loop a screw driver or other tool. The burner throws a powerful flame from 6 to 8 inches long. The hook and notch on top of the burner are designed to hold a soldering iron. This enables the lamp to be used not only by painters, but also by plumbers, tinners or other workmen who need a torch to throw a powerful flame. It is stated to be an ideal burner for thawing frozen water pipes, and that while the device is exceedingly light, yet it is constructed so as to make it very durable. The lamp has been the subject



The Quick Meal Paint Burner.

of thorough experiment with the company, who claim that it is a decided improvement over the usual lamp or torch of this character.

FLASHINGS.

THE SUMMIT ROOFING COMPANY of New York City have been incorporated, with a capital of $10,000, by G. J. Geer, S. H. Ordway and W. A. Gommell.

THE DETROIT GALVANIZED SHEET & METAL WORKS, Detroit, Mich., are about to add a Tin Can factory to their manufacturing plant.

THE Sheet mill plant of Marlin & Co., at Thirtieth and Smallman streets, Pittsburgh, Pa., was partly destroyed by fire last week, the damage to the building and equipment being estimated at about $6000.

THE AMERICAN ROLLING MILL COMPANY of Muncie, Ind., and the Tin Plate works of the W. H. Griffith Company, at Washington and Waynesburg, Pa., have signed the Amalgamated Association wage scale.

THE TYLER CAN COMPANY of Baltimore, Md., have been incorporated by George M. D. Tyler, George M. D. Tyler, Jr., George F. Flemming, Samuel Parsons and Lindley M. Huggins, with a capital stock of $5000, for the purpose of manufacturing articles made of Tin and other Metals.

THE SENTENNE & GREEN COMPANY, with principal office at 228½ Montieello avenue, Jersey City, N. J., have been incorporated, with a capital stock of $250,000, by George F. Maguire, Ernest H. Ball and Robert R. Ball. The company will manufacture Tin Cans, Metal Signs, &c.

THE BROOKLYN METAL DECORATING PLANT have been incorporated, at Brooklyn, N. Y., with a capital of $5000. The directors are: George Meier, Mt. Vernon, N. Y.; E. A. Emerson, New York, and E. B. Barnum, Brooklyn.

THE site of the American Sheet Steel Company's old plant in Sharon, Pa., will shortly be utilized for the erection of a mill of another description, say the Sharon papers.

E. K. SOBER has resigned as manager of the American Sheet Steel Company's plant at Canton, Ohio. He is succeeded by Mr. Ward, manager of the company's Cambridge, Ohio, plant.

HUGH ANDERSON, formerly master mechanic of the Hazleton Works of the Republic Iron & Steel Company, Youngstown, Ohio, but who has accepted a similar position with the Youngstown Iron & Steel Roofing Company, was presented with a gold watch chain and charm by the employees of the Hazleton works.

W. VERNON PHILLIPS of F. R. Phillips & Sons Company, Philadelphia, builders of Tin Plate machinery, has sailed for Liverpool on a business trip in the interests of the firm. He will go to Wales and the Continent, returning about September 15.

THE AMERICAN SHEET STEEL COMPANY have at the present time 21 Sheet mills in the Vandergrift Works, at Vandergrift, Pa.; ten mills in the Leechburg Works, at Leechburg, Pa.; four mills at the Saltsburg Works, at Saltsburg, Pa., and six mills in the Apollo Works, at Apollo, Pa. It is the intention to add eight more mills to the Vandergrift Works, making that a 29-mill plant. All these mills are in charge of E. W. Pargny, who is manager for the Pittsburgh district for the American Sheet Steel Company. The equipment at the Leechburg Works has been very much improved, and has been brought up to the best possible sheet practice. The equipment at the above four works is kept in the best possible condition by a large force of millwrights and machinists, that a shut down in the summer for repairs is not necessary. At these works the Amalgamated scale is not signed, and the mills are all in full operation, despite reports to the contrary.

THE WHEELING STEEL & IRON COMPANY of Wheeling, W. Va., have signed the Amalgamated Association scale.

AT a recent meeting of the directors of the stockholders of the Youngstown Iron Sheet & Tube Company, Youngstown, Ohio, the officers were instructed to take the necessary steps to increase the capital of the concern from $1,000,000 to $2,000,000, having in view the necessity for enlarging the present plant of this concern, which is now being built. While it may be necessary a little later to erect a steel plant, yet this concern do not expect to do so at once, and will not, unless necessary to provide themselves with Rod material. Contracts for the building of the works of this concern have about all been placed and the work of construction is being pushed as fast as possible. The initial plant will consist of puddling, Muck Bar, Skelp, Tube and Sheet mills. The concern propose to make Iron Tubes and Iron Sheets exclusively, and will do their own puddling. They expect to be in the market late in the year with their product.

TRADE NOTES.

THE NUNN BRASS WORKS of Rochester, N. Y., have been incorporated with a capital of $4000, Lorasso Field, A. W. Nunn and Elizabeth R. Booth of Rochester being the directors named.

THE COLUMBIA LEAD COMPANY, St. Louis, Mo., have increased their capital stock from $500,000 to $600,000.

THE BURGESS SOLDERING FURNACE COMPANY of Columbus, Ohio, are running their plant night and day to keep up with their orders. A patent on a new Gas Heating Stove has just been granted them, which will be placed upon the market during the coming fall season.

WE are indebted to Baker & Co., 408-414 Railroad Avenue, Newark, N. J., for a sample of a neat little dating stamp which they are sending out to their customers, also a notebook bound in a white celluloid cover, which in addition to information regarding the company's goods, consisting of Platinum Sheet and Wire, has tables of weights and gauges of Platinum, also a comparative table of troy, avoirdupois and French weights, tables of specific gravity of various metals, and other useful information. A number of blank pages are left for notes.

A CIRCULAR letter issued by the Buffalo Specialty Mfg. Company, Buffalo, N. Y., incloses a leaflet illustrating and describing the company's Success Emery Grinder for foot power, which is claimed to have special merits, 3000 revolutions per minute being easily obtained. The machine is 4 feet high and is arranged for attachment to the floor and wall. As an inducement to the trade to purchase, the company are offering to send out free of charge one-half dozen of their Steel Solid Leather Handled Screw Drivers in assorted sizes with each of the Grinders shipped in response to orders.

THE Emery syndicate, composed of four firms which practically control the Emery industry of this country, took hold of the business on July 1. The capital of the syndicate is $400,000 and the officers are: Lewis R. Speers of Boston, Mass., president; Albert Sandt of Easton, Pa., treasurer, and John West of Perth Amboy, N. J., secretary.

THE AMERICAN METAL COMPANY, LIMITED, of New York, have filed with the Secretary of State of New York a certificate of an increase of the capital stock of the company from $1,000,000 to $1,500,000.

THE HEANY COMPANY, galvanizers of iron, 46 and 48 North Morgan street, Chicago, have just completed the erection of a new brick building, 40 x 100 feet. This will be used as a Galvanizing plant and will materially increase the capacity of the works.

IT is reported that the enamelling works at Duquesne, Iowa, have been sold to New York and Chicago capitalists and that manufacturing operations will be conducted on a larger scale than heretofore.

WILLIAM B. SCAIFE & SONS of Pittsburgh, manufacturers of Structural Iron Work, Pressure Tanks, Galvanized Ice Cans, Sheet Plate and Forged Iron Work, have secured a contract from the Mexican Central Railroad for a large Galvanized Cylinder, on which a steel frame pier is to rest. The contract necessitates an enlargement of the galvanizing plant of William B. Scaife & Sons. These Cylinders, which are to be galvanized and then riveted together, are 6 feet in diameter, made of ⅝-inch thick steel, each weighing about 2800 pounds. They are to act as piers, and when put in place will be filled with concrete. They are the largest Cylinders that have ever been galvanized in this country, and it is

doubtful if anything as large has ever been galvanized elsewhere. This firm did similar work for the Port Royal Navy Yard wharf last year, but the Cylinders were only 4½ feet in diameter, made of ⅜-inch, and weighed 1100 pounds each.

The Molders' Conference.

A conference was held at the Sherman House, Chicago, on Tuesday, July 2, between committees of the National Foundrymen's Association and the Iron Molders' Union of America to establish the wage scale for the ensuing year. The former was represented by Geo. Q. Thornton, St. Louis; I. H. Reynolds, Milwaukee; H. S. Hodge, Detroit; H. J. Gosiger, Cincinnati, and W. A. Jones, Chicago. The Molders' Union was represented by Martin Fox, M. J. Kehoe, David Black, W. J. Phillps and John Campbell. The old scale was $2.50 minimum for bench molders and $2.75 for floor men. The molders first asked $3 flat. They modified their demand to $2.85 per day minimum for floor and bench molders for Chicago and vicinity. This was refused by the foundrymen, who offered $2.85 for floor molders and $2.65 for bench molders. This not being accepted by the molders, further consideration was postponed until July 10, the molders meanwhile remaining at work.

Electric Fire Hazard.

Edward Atkinson, president of the Boston Manufacturers' Mutual Fire Insurance Company, calls attention to the occurrence of fires directly traceable to electrlcity and summarizes the general conclusions for this experience as follows:

Any plant installed ten years or more ago will, in nine cases out of ten, come under what we may call the "wooden age" of electrical work—that is, when the switchboards, cleats, rosettes, celling buttons and cut outs were all more or less of wood; this class of fittlngs offers very little resistance to heat caused by arcing or by poor contacts. In inspecting a system where all the above named parts are of porcelain, it is falr to conclude that it is a modern Installment and probably safe. On the other hand, all plants put in during the "wooden age" must be regarded with suspicion; they may be found in many respects defective, and may also have been subject to a greater measure of wear and tear than the plants which have of late been established. It may often happen that, while the wiring may need renewing, the switchboard may be safe, or *vice versa;* again, that both the wiring and switchboard may be passed, if the fittings are renewed. It would therefore be well, if any radlcal changes are advised, to consult the underwriters, who will then make an immediate inspection. It is the conviction of the adjusters and experts, by which the increasing number of very heavy losses in the general practice of underwriting are appraised, that a large and Increasing part of the great fire waste in the last two or three years may be attributed to electric hazard.

To Weld Copper.

In the *Record* of the University of Tennessee, Professor J. R. McCall gives the following directions for welding copper. The copper should be treated with potassium nitrate and a cyanide, after which it is welded to itself, or to iron or steei, in the same way that iron is welded in the ordinary forge shop. A clean fire of coke or charcoal and a temperature of the copper considerably below a white heat insures the best results. A temperature above this makes the metal brittle in working, while one much below would not give sufficient fluidity to the flux. In teasion tests the welded joints devcloped practically the whole strength of the copper.

Charles M. Schwab, president of the United States Steel Corporation, recounts this experience. Recently he came to Braddock to make an inspection of the Edgar Thomson plant. A buggy with a colored driver was awaiting him at the station. He had just settled down into his seat beside the negro when he overhead a working woman calling to her boy: "Look, look, Johnnie, there is the famous Mr. Schwab!" The boy glanced at the occupants of the buggy, and then turned to his mother with the question: "Which one?"

Fire Test of Wire Glass.

Wire glass windows and standard fire shutters of two different makes were recently subjected to three interesting tests in New York, nnder the supervision of the city Building Board, and in presence of several insurance men, with a view to showing the relative efficiencies of each. An expert insurance company's inspector who was present is quoted by *Fire and Water* as drawing the following conclusions from the tests: "The first test was unsatisfactory, for the reason that it is an open question whether or not the excelsior mattress in the test structure snbjected to an exterior fire was ignlted by radiation or by sparks coming through the only partly closed ventilators under the roof. Judging from the low temperature of the outer glass while the interior fire was in progress, it is hard to conclude that radiation lgnited the mattress. The other tests, the fire in the third being interior, were entirely satisfactory, and demonstrated that wire glass, when in approved frames similar to those used in these tests, is more reliable than the common iron shutters, and in many cases is capable of taking the place of standard shutters, provided that in windows over roofs, or when exposure is within, say, 15 feet of the risk, or when openings are in interior division walls, the panes of glass are double, with air space between. Even the double sashes, however, can hardly be considered the equal of the standard tin clad wooden shutter, on account of the chances of warping, the radiation of heat, and the chance of breakage by falling walls, &c. From other tests it has been shown that inflammable material should be kept at a distance of about 4 feet from the window when single panes are used, and at about 15 inches, with double-ventilated panes. The softening point of wired glass is claimed to be about 3000, a temperature seldom reached by an exposing fire—while the melting point of ordinary window glass is from 800 to 1000."

To Clean Rusted Iron Work.

An ingenious method of cleaning rusted iron work is suggested in an English exchange, which is specially applicable to articles which cannot be filed or ground, or which have recessed parts difficult to get at. The process has the merit of slmplicity. Attach a piece of ordinary zinc to the iron work, then immerse the whole lnto water in which is a little sulphuric acid. Let them remain for several days, when the rust will probably have disappeared. If, however, the article is badly rusted a little more acid may have to be added. It is necessary that the iron and zinc be in good electrical contact, bonnd together with wire, or it will answer if a piece of battery zinc is connected up to the iron with a piece of iron wire tightly wound ronnd. If the rust is only superficial it will suffice if a piece of galvanized iron is wonnd round the article, the galvanized surface, being zinc, proving sufficient for the purpose. The iron is not attacked by the acid while the zinc is in proper contact. The article will come out a grayish black color and should then be washed and oiled.

The Census Bureau has issued a bulletin giving the statistics of manufactures for the State of Delaware. The bulletin places the total gross value of manufactured products for the State at $45,387,630, an increase of 20.8 per cent. over the value of such products for 1890. The number of establishments in 1900 was 1417; the capital invested, $41,203,239; average number of wage earners, 22,203; total wages paid, $9,263,661; cost of material used, $26,652,601. The net or true value oi products is given at $29,573,449, the value of materials purchased in a partly manufactured form being $15,864,041.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

TROUBLE WITH PATTERN FOR SHIP'S VENTILATOR.

From J. B., San Francisco, Cal.—I have one of your pattern books, from which I have studied the pattern for the ship's ventilator. I have tried every possible way to work the problem out for myself, but do not seem able to succeed. I send you herewith one of my drawings and hope you will be able to discover the cause of my failure.

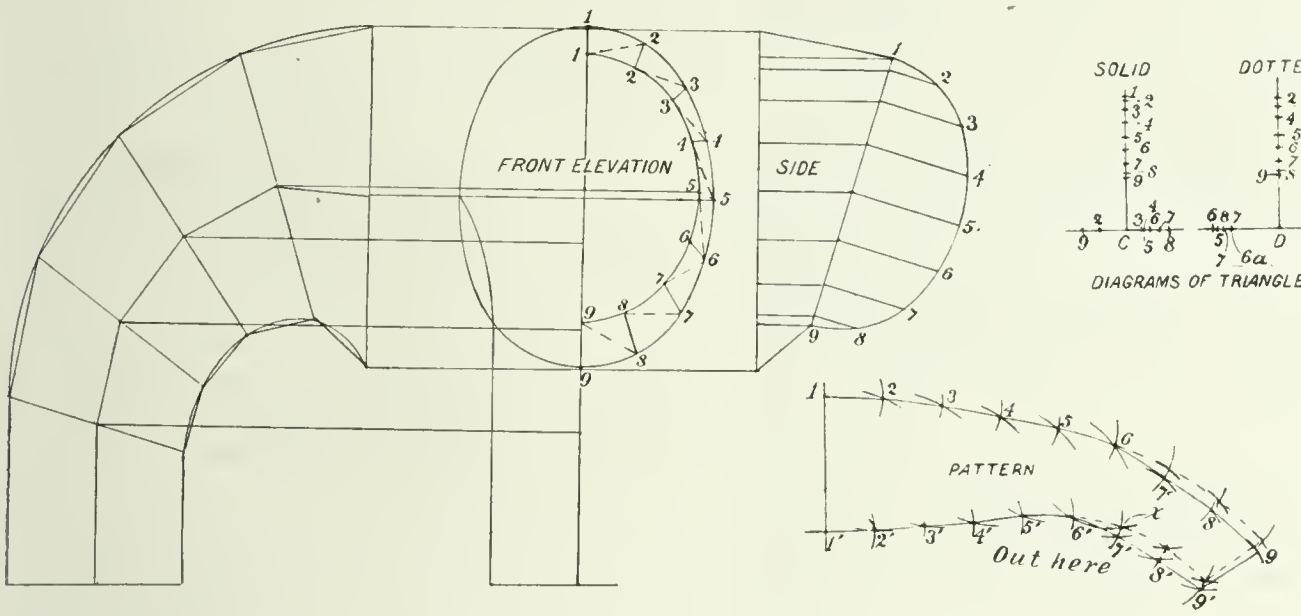
Answer.—We are in receipt of many communications from readers asking how to develop certain patterns, but it is seldom that the inquirer sends in his drawing with the request to point out his errors. Our correspondent's action in the matter is to be commended, as by so doing we are enabled to see at once just where his error occurred and thus render him the assistance desired. He does not state whether his "pattern book" is one of our latest issue, entitled "The New Metal Worker Pattern Book," or a copy of the older book bearing a similar title. At the bottom of the first column of page 91 of the new work it is stated that "The operations of triangulation undoubtedly require more care for the sake of accuracy than those of any other method of pattern cutting, for the reason that there is no opportunity of stepping off a continuous stretchout, at once, upon any line either straight or curved. . . . Triangulation is not introduced as an alternate method, but as a last resort, when nothing else will do."

This is intended as a warning to the pattern cutter to exercise the greatest care in the operations of triangulation. The errors into which he can fall are mainly of two kinds—viz.: (1) Inaccuracy in taking the various measurements required in developing the pattern, and (2) the taking of wrong measurements arising from confusion where several points come very close together, as in the diagrams of triangles where some of the measurements differ but slightly from those next in order.

In the accompanying illustration we show a *facsimile* reproduction of our correspondent's drawing, to which, however, we have added a correction of his pattern in dotted lines and a correction of some of his numbers, shown by the long leaders in the diagram of triangles marked "dotted." His principal error belongs to the second class mentioned, but is caused by a change in the direction of the oblique measurements after points 6 and 6′ of the pattern have been reached. In constructing his diagrams of triangles he has set off the vertical hights of the several points in the upper or smaller end of the section under consideration upon both the vertical lines in the diagrams of triangles, these hights being taken from the side at the right of the elevation. In the diagram marked "solid" he has set off from C on the horizontal lines the lengths of the several solid lines 2 2, 3 3, &c., of the front elevation, the numbers on the vertical line being supposed to represent the points in the smaller end, which, for convenience, we shall call the top, while those upon the horizontal line represent the points in the larger base, which we shall call the bottom. In the diagram marked dotted the lengths of the dotted lines, 1 2, 2 3, &c., connecting points of different number in the elevation, are set off from D upon the horizontal line and should be numbered to correspond with the points in the line of the bottom in the front elevation. In this operation our correspondent has made his first error.

In the division of the four sided figures produced by the solid lines 2 2, 3 3, &c., with the upper and lower lines of the elevation, a greater degree of accuracy is produced by drawing the dotted line so as to follow the shorter diagonal. Thus the diagonal drawn from 1 at the top to 2 at the bottom is shorter than one drawn from 1 at the bottom to 2 at the top. The direction here assumed holds good till the middle of the figure is reached, when the diagonal drawn from any point upon the top line to the point of next lower number at the bottom becomes the shorter. He has seen fit to change the direction of his dotted diagonal after passing the solid line 6 6. In this respect he has followed the precedent given in the pattern book, although, as will be seen by reference to the front elevation, he might with propriety have made the change after reaching the line 5 5. In setting off the length of the dotted line 6 7 of the elevation upon the diagram of triangles he has numbered the point on the base line 7, instead of 6, the number at its lower end. There should thus be two points 6 upon the base line, one representing the position of the point 6 at the bottom with reference to point 5 at the top, and the other representing its position with reference to point 7 at the top. In the same manner the lengths of the dotted lines 7 8 and 8 9 of the elevation have been set off from D of the diagram and have there been marked 8 and 9, the numbers of the top, when they should have been marked 7 and 8, the figures at the bottom ends of the respective lines. The correct numbers of the points in question are shown at the ends of the long leaders below the base line of the diagram.

This error in numbering the points is undoubtedly



Trouble with Pattern for Ship's Ventilator.—Reproduction of Diagrams Submitted by "J. B." of San Francisco, Cal.

responsible for the error in the pattern beginning at the point where our eorrespondent has written the words "out here." Barring slight inaeeuraeies of measurement the pattern is eorreet up to this point. After the points 6 and 6′ have been reached the next measurement to be transferred to the pattern is the distance from 6 at the bottom to 7 at the top. This measurement (the distance from 7 on the vertieal line to point 6*a* on the base line of the diagram) being used as a radius to describe an arc from point 6 of pattern as center would intersect the arc through 7′ at point *x*. As the length of the radius which has really been used in the pattern (6 7′) corresponds with the distanee from 7 ou the vertical line of the diagram to point 6 at the extreme left (the point whieh, as before stated, was placed there for use with point 5 on the perpendicular), it is evident that he has used that distance as a radius, instead of the distauce from 7 ou the perpendicular to point 6*a* on the base line of the diagram, which he has numbered 7.

The remaining two radii, eorresponding to dotted lines 7 8′ and 8 9′ of the pattorn, are approximately correct, although they correspond in length with distances which, according to his numbers, are 8 8 and 9 9 of the diagram marked "dotted."

If the point *x* be used, instead of the point 7′ of the pattern, from which to describe the are whose radius is 7 7, aud the remaining triangles be eonstructed as before, the pattern will then assume the shape shown by the dotted lines.

Tho reader will notice that he has not drawn the several hypotennses, to obtain which the diagrams are constructed. This is, of course, not necessary so long as the points of the compasses are placed on the correct points when measurements are being taken. The drawing of them and likewise the drawing of tho several solid and dotted lines corresponding to them across the pattern, however, will serve to keep before the eyes things which the miud may fail to retain unaided, and thus avoid an error.

Besides the grave error just considered, several smaller errors of the first class above mentioned are noted in the drawings which, owing to the reduetion necessary to bring the engravings into our columns, are not very perceptible. These inaccuracies may be pardonable iu the case of a person who is not used to making small drawings. The proportion of error thus incurred would no doubt be greatly reduced were the drawings made the full size of the work required.

Answers to other inquiries regarding this problem, which have been published in our issues of March 16 and May 21 of this year, may be of interest in this eonnection.

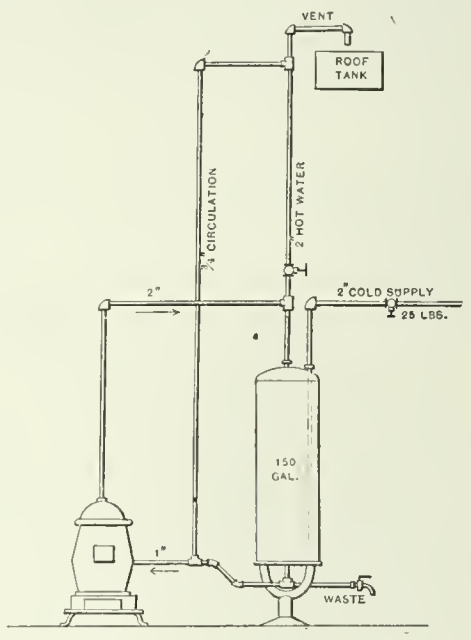
DOES THE OHIO LAW REQUIRE OUTSIDE AIR?

From the Peck-Williamson Company, Cincinnati, Ohio.—In answer to the inquiry of "G. R.," in *The Metal Worker* of June 29, we would say that there is no State law in Ohio requiring the air for school buildiugs to be takeu from the outside, nor is there any law which requires a change of air a given number of times per hour. However, in our eommon engineering practice, we figure on supplying 30 cubic feet of air per pupil per minute to the full seating capacity of the building, and always take this air from out of doors, at a point where it is least likely to be contaminated.

WHY DID THE HEATER BURST?

From Plumber, New York.—The explanation and sketch presented in *The Metal Worker* of May 25 by "A. B." do not show just how the work was done, and we submit herewith a correet sketeh, together with the circumstances attending the fitting up of this boiler. The boiler which is intended to be used permanently in this building is of 800 gallons capacity, but owing to delay in getting it, a temporary boiler was eonnected. The jaeket of the heater in the first instance showed a defect in the casting and another was substituted. After firing up, a second defect was found. The maker elaimed, however, that steam generated in the jaeket and drove the water out, letting the returning eold water cause the wrecking of the jaeket. We claim that sueh is not the case, as the sketch would show that if steam was generated, as the maker claimed, it would find vent at the roof tauk, as there was only 15 pounds pressure to overcome. The eold water pressure was 25 pounds. The capacity of the hot water storage tank was 150 gallous, and the heater had a 24-ineh fire pot.

Note.—We shall be glad if our expert readers will give their views in reference to the piping system whieh is presented as correct. It would seem that the slight differenee in piping would have no beneficial effeet over that whieh was shown in *The Metal Worker* on May 25, and that the views expressed in referenee to that piping system would hold good in this instance. Wherever the inlet pipe to a water heater is not as large as the outlet there is an opportunity for the boiler, when exeessively heated, to be cleared of water through the genera-



Why Did the Heater Burst?

tiou of steam, and when cold water rushes in to fill the vacuum the results are likely to be disagreeable, if not dangerous. It would have been better if, instead of using a 2-inch pipe from the top of the water heater, 1-inch pipe had been used throughout for the eonnection with the storage tank. It is just such little details that make or mar much work that is done.

A ROOFING PROBLEM.

From J. & C., Troy, Ala.—We have a roofing problem which we wish to solve, and if *The Metal Worker* will kindly give us the desired information we shall be thankful. The architeets through this seetion, in speeifying the method of putting on flat veranda and deck roofs, where 20 x 28 tin is used, require that it shall be put on flat, lock seamed and soldered on both sides and the same nailed to the sheathing. The question is, ean *The Metal Worker*, or any of its readers, tell us how it can be done in a skillful and workmanlike manner? We think we are practical roofers, but this gets ahead of us.

Note.—In some sections of the country, instead of flat seam roofing being put on a sheet at a time, the tin is prepared in rolls. Usually it is soldered on but one side, although it is often painted ou the under side. In applying the tin to the roof, a ½-inch edge is turned up along one side of the strip and turned down on the other. The strip is then fastened by nails beiug driven close in under the edge which is turned, and the eloser the nails are placed together the more easily and strongly the seam can be soldered. Tinned nails should be used for this purpose. It may be that the architects desire to have the tin put up in rolls for this class of work, and have the seams soldered on both top and bottom sides.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is dull and unchanged in price.

Copper remains without change and in moderate demand.

Pig Lead is steady and strong.

Spelter is weak and dull.

Antimony shows no change.

Nickel is scarce and strong.

Aluminum is active and at former prices.

Tin Plates are in good demand and firm in price.

Black Sheets were reduced in price $4 per ton July 1, but retail quotations are unchanged; demand is heavy.

Galvanized Sheets are in heavy demand, and scarce; reduction of 5 per cent. in price by makers has not affected retail quotations.

Old Metals are dull and weak.

Foundry Pig Iron is quiet and unchanged.

Sheet Copper is fairly active and firm.

Plumbers' Supplies are very firm in price; business quiet.

Lead Pipe and Sheet Lead have stiffened ¼c. in price.

Wire Nails are moving in moderate volume—prices unchanged.

Cut Nails are without change and in fair demand.

Wire is very active and strong in price.

White Lead is quiet and firm.

Linseed Oil was further advanced in price 7c. per gallon; demand continues good.

Spirits Turpentine is about ½c. a gallon lower and dull.

Old Rubber is in good demand and prices are firm.

METAL MARKET.

Office of *The Metal Worker*, 232-238 William street, New York, July 5, 1901.

Pig Tin.—The market here has been inactive since our last report, with prices mostly in buyers' favor. On Wednesday prices took on a firmer tone, owing to an advance in London, due to a corner on spot Tin in that market. Owing to the extreme heat of the weather the New York Metal Exchange was closed from July 4 until Monday, July 8; consequently no quotations were made the latter part of the week. Retail prices have undergone no change, Straits Pig in small lots being quoted at 29¼c. to 29½c. per lb.

The following statistics for the month of June are published by the New York Metal Exchange: Arrivals at the Atlantic ports were good. Deliveries were the largest on record; the total for the first half of this year is 600 tons more than for the same time last year. The monthly shipments from the Straits were large. The increase in the Straits shipments to Europe and America during the first half of this year amounts to 2700 tons. The total statistics show a decrease of 2225 tons as compared with the previous month. The heavy decrease came through the writing off of 750 tons, representing the cargo of the wrecked steamship "Asturia." The total visible supply on June 30 is 5654 tons, or 436 tons below that of June 30 of last year.

Charles S. Trench & Co., New York, under date of July 1, 1901, print the following American Pig Tin statistics:

	Tons.
Estimated stocks on spot, New York, Philadelphia and Boston, June 1	1,326
Actual arrivals during June, New York, Philadelphia and Boston	2,886
Total	4,212
Estimated consumption during June	2,700
Esticated stocks on spot, New York, Philadelphia and Boston July 1	1,512
Actual afloat from East Indies, shipments to July 1	2,286
Actual afloat from England	220
Actual afloat from Holland	50
Total visible supply, July 1	4,068
As against June 1	5,427

Copper.—No change has taken place in this market, which has been very dull throughout the week, with prices unchanged and steady. Small lots of Lake Ingot are quoted at 17¼c. to 17½c. per lb., and Casting Copper at 16¾c. to 17c. The consumptive demand for Copper at the present time is of exceedingly moderate proportions.

Sheet Copper.—A good demand for Sheet Copper is noted, prices being unchanged on the basis of 21c. per lb. for moderate sized lots from store.

Pig Lead.—There has been no change of any kind in this metal. Prices continue firm, and the demand is of the usual proportions expected at this time of the year. Small lots of American Pig are quoted at 4.60c. to 4.62½c. per lb.

St. Louis advices are as follows: The demand for Pig Lead has been very strong for the past few days, and some good sized lots have been bought. The demand is from consumers entirely, there being apparently no speculation in the market. Higher prices are anticipated.

Spelter.—This metal is still dull and weak. Good Western brands in small lots are quoted at 4.45c. to 4.50c. per lb. In the St. Louis market there is not much doing, and prices show no variation from those of a week ago.

Sheet Zinc.—A fair demand at unchanged prices is reported for Sheet Zinc, jobbers quoting 600-lb. cask lots at 6¾c. per lb., and smaller quantities at 7¼c.

Antimony.—No change has taken place in this metal. Prices are steady; Cookson's in small parcels ruling at 10½c. to 11c. per lb., and Hallett's at 8¾c. to 9½c.

Nickel—Is strong and unchanged. Small lots are quoted nominally at 60c. to 65c. per lb.

Aluminum.—A steady and active demand keeps up for Aluminum, and prices are without change. Small lots of No. 1 Ingot, guaranteed over 99 per cent. pure, are quoted at 37c. per lb., and 100-lb. lots at 35c.

Tin Plates.—The situation in the Tin Plate market is without any change worthy of note. The signing of the Amalgamated Association scale by the Tin Plate mills is satisfactory to the trade, as removing the possibility of a prolonged shut down of the mills, with a consequent restriction of production. This contingency would have greatly complicated matters in the Tin Plate market, as the mills are a long way behind in their deliveries, and it will need pretty steady operation of the works throughout the summer to enable them to meet the requirements of the trade. The demand for Coke Plates, in particular, exceeds the output at the present time, and jobbers find it impossible to meet all the demands of their customers for this class of Plates. Prices are held very firmly in a retail way. Buyers are generally obliged to pay an advance over the market rates in order to secure prompt supplies. The retail trade in Tin and Terne Plates gives some indications of the arrival of midsummer dullness. The extreme heat of the past two weeks was reflected locally in material falling off in the volume of small orders. Jobbers are quoting American Bessemer Coke Plates, IC, 14 x 20, at about

$4.85 to 4.90 per box, and IX, $5.95 to $6, for moderate quantities, delivered at New York or corresponding points.

Sheets.—The surprise of the week in the metal market was the announcement by the American Sheet Steel Company of a reduction of about $5 a ton in the price of both Black and Galvanized Sheets, effective on July 1. This reduction was unexpected by the trade in the face of present conditions in the Sheet business. The explanation is given that the method is a part of the policy of the United States Steel Corporation to keep the prices of their products on as conservative a basis as possible. It may also be that the reduction is made partly with a view to heading off any large importing movement in Sheets that may have been in contemplation as a result of the shortage now prevailing, and of the possibility of a more or less prolonged suspension of a good part of the Sheet capacity, pending the agreement on the wage scale. It is obvious that the reduction could not possibly have been made with a view of stimulating business. As we have been reporting for some weeks past, the scarcity of Sheets has been becoming more marked week by week. Stocks are very light, and the manufacturers refuse to promise any deliveries on new orders within 90 days. The situation in the Sheet market consequently is an unsatisfactory one from the standpoint of dealers and consumers. It is not unlikely that an absolute famine in Sheets may occur within the next few weeks, although the non-union mills of the American Sheet Steel Company, and most of the independent concerns, are continuing operations without interruption. The demand for Sheets during the past week continued as active as ever, especially for Galvanized Sheets, which are even more scarce than Black. The reduction of prices by the American Sheet Steel Company has not affected jobbers' prices in this vicinity. Retail quotations continue the same as those ruling for the past few weeks—viz., 3.65c. to 3.60c. for No. 27 Black One Pass Cold Rolled Soft Sheets, and 62½ and 65 per cent. off the list for Galvanized Sheets.

Chicago advices are as follows: The Sheet trade has been unusually prominent because of the suspension of the union mills. Inquiries have increased, and orders are taken subject to delays from strikes. The stocks in store locally are not large, and while the demands made upon them are in keeping with the conditions prices from store have not advanced. The situation has added interest from the readjustment in the prices made last Monday. While this adjustment of Sheet prices with those of other products has been in the nature of a reduction on mill quotations, that result is said to be only incidental to the main purpose, which is to harmonize the values of the various Steel products. No. 27 Black are strong at 3.40c. to 3.50c. in small lots, and Galvanized at 65 and 10 to 70 off.

Old Metals.—The demand for Old Metals of all kinds is tame and prices are rather weak, while showing no quotable change. Dealers are paying about the following prices for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 15 c.
Light and Tinned Copper	per lb. 13½c.
Heavy Brass	per lb. 10 c.
Light Brass	per lb. 8 c.
Lead	per lb. 4 c.
Tea Lead	per lb. 3½c.
Zinc	per lb. 2¾c.
No. 1 Pewter	per lb. 18½c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	$6.00
Wrought Iron Scrap, per gross ton	$10.50 to 11.00
Heavy Cast Scrap, per gross ton	10.00 to 10.50
Stove Plate Scrap, per gross ton	7.00 to 7.50
Burnt Iron, per gross ton	5.00 to 5.50

The idea of having a roof garden in connection with a building is not confined exclusively to theatres and apartment hotels, but is now and then to be found as a feature of a church edifice. There was recently dedicated in Parkersburg, W. Va., a kite-shaped church building with a roof garden consisting of an upper story with 22 windows. These are so arranged that when opened the sides of the structure practically disappear, leaving only the supports of the roof. The pastor of the church planned the building.

THE PIG IRON MARKET.

New York.—The market has been very quiet during the week under review; no sales of any magnitude are reported. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $14.75 to $15; No. 2 Foundry, $14 to $14.50; No. 1 Soft, $14.50 to $15; No. 2 Soft, $14 to $14.50; No. 3 Foundry, $13.25 to $13.50; No. 4 Foundry, $12.75 to $13.25.

Chicago.—The market during the week has been somewhat quiet. There has been so much uncertainty ahead regarding the continuance of steady operations that some melters of iron have not only withdrawn from the market, but have temporarily closed their foundries until the question of wages has been determined. Trading has been of fair volume. Some of the orders were for deliveries during the last quarter of the year. Prices are without material change. The local Irons are strong and some of the Southern producers are said to be firmer in tone, but there still is reported a shading of quotations of other Southern producers. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon	14.90 to 15.15
Southern Coke, No. 1	14.65 to 14.90
Southern Coke, No. 2	14.15 to 14.40
Southern Coke, No. 3	13.65 to 13.90
Southern Coke, No. 1 Soft	14.65 to 14.90
Southern Coke, No. 2 Soft	14.15 to 14.40

Pittsburgh.—The Pig Iron market is in the same condition as noted last week. Bessemer Iron for July shipment is pretty well sold up and prices are firmly held. Foundry Iron is unchanged. We quote Bessemer Iron at $15.25 to $16: No. 1 Foundry at $15 to $15.25; No. 2, $14.50 to $14.75; No. 3, $14 to $14.25, all f.o.b. cars Pittsburgh.

Cincinnati.—Quietness is still the order of the day in Pig Iron circles. The trading is confined almost exclusively to retail orders and but few are booked for a larger amount than 100 tons. Outside of these the market is at a standstill and weak at the given quotations. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$13.50 to $13.75
Southern Coke, No. 2	13.00 to 13.25
Southern Coke, No. 3	12.25 to 12.75
Southern Coke, No. 4	11.75 to 12.00
Southern Coke, No. 1 Soft	13.50 to 13.75
Southern Coke, No. 2 Soft	13.00 to 13.25
Southern Coke, Gray Forge	11.75 to 12.00
Southern Coke, Mottled	11.75 to 12.00
Ohio Silvery, No. 1	15.50 to 16.00
Ohio Silvery, No. 2	14.50 to 15.00
Lake Superior Coke, No. 1	14.50 to 15.00
Lake Superior Coke, No. 2	14.00 to 14.50
Lake Superior Coke, No. 3	13.50 to 14.00

St. Louis.—The market continues in the quiet condition which has characterized it for the past 60 days. There are quite a number of inquiries at hand, which, however, do not develop into sales of any moment. The firm stand taken by the large producers not to further shade the prices has resulted in filling the order books of the smaller concerns, and has also strengthened the impression that prices are as low as they are likely to go. As there are only a limited number of consumers who have arranged for their requirements beyond September 1, an early increase in the demand is confidently anticipated. We quote carload lots as follows, f.o.b. St. Louis:

Southern, No. 1 Foundry	$14.25 to $14.50
Southern, No. 2 Foundry	13.75 to 14.00
Southern, No. 3 Foundry	13.25 to 13.50
Southern, No. 4 Foundry	12.75 to 13.00
No. 1 Soft	14.50 to 14.75
No. 2 Soft	14.00 to 14.25

CHICAGO REPORT.

Scrap Iron & Steel.—The week has been rather quiet and the demand is light. Prices are weak. Dealers quote the following prices in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap	$10.50 to $11.00
Machinery Cast	10.00 to ....
Malleable Cast	10.00 to 11.00
Stove Plate (free from burnt)	7.00 to 7.50
Burnt Iron and Grate Bars	5.50 to 6.00
Sheet Iron and Hoops	6.00 to 7.00
Plow Steel	9.00 to 10.00

Breaking Stock	9.00 to	9.50
No. 2, such as Shovels, Hoes, &c.	.... to	7.00
Old Boilers—whole (Iron)	.... to	7.00
Old Boilers (Iron) cut in single Sheets and Rings	9.50 to	10.00
Old Gas Pipe and Boiler Tubes	9.50 to	10.00
Cast Borings	.... to	3.75
Turnings	8.00 to	8.50
Horseshoes	11.00 to	....

Old Metals.—Trade continues dull. Consumers are not buying, and no improvement is looked for before the settlement of the machinists' strike. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	15 c.
Copper Bottoms	13½c.
Copper Clips	14½c.
Red Brass	13⅞c.
Yellow Brass	10 c.
Red Brass Borings	11½c.
Yellow Brass Borings	9 c.
Light Brass	7¾c.
Pipe Lead	4 c.
Tea Lead	3½c.
Zinc	2¾c.
Pewter, No. 1	19 c.
Pewter, No. 2	10 c.

Old Rubber.—Conditions are unchanged. Buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$20.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7 2-3c.
Rubber Car Springs	....	4¾c.
Inside Bicycle Tubing	....	21 c.
Outside Tubing	....	7¼c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—The past week has been fairly active, with a good demand. A discount of 20c. from these figures is allowed on all Coal ordered to be shipped in July. The discount is 10c. in August, full prices being restored in September. Quotations on carloads are as follows:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis.	5.75	6.00
St. Louis	6.25	6.50
Kansas City, Mo.	8.25	8.50

THE HARDWARE TRADE.

The first half of the year has made for itself a memorable record, in view of the large volume of business and the excellent tone which has characterized the market. Manufacturers in most lines have had a very satisfactory trade at remunerative prices. With the merchants, large and small, a similar condition of things has prevailed. The volume of business both with jobbers and retailers has been large and reasonably profitable. It has not been an era when speculation entered much into the conduct of trade, but merchants have felt safe in their purchases, which have been liberal, to meet the requirements of their customers. Competition with both the retail and wholesale houses has been active, and the changing channels and methods of trade have presented many problems of difficulty. On the whole, the past six months have given to the producers and distributers of Hardware and Iron products an exceptionally favorable opportunity for successful business. All except those handicapped by some unusual circumstances or conditions have done, it may be presumed, a profitable and satisfactory business. It is gratifying to be able to begin the last half of the year with a continuance of prosperous conditions. Trade in practically all branches of business gives evidence of prosperity. The consumption of goods, which absorbs the enormous production of the factories, shows the well-being of the people at large. The crop prospects are excellent, with the probability of a heavy foreign demand. The railroads are, naturally, sharing in the general activity and prosperity. From these propitious conditions the Hardware and Iron trades should be able to secure their share of advantage, especially as there is nothing of grave import in the special features of the market to justify anything but a hopeful view of future business.

NOTES ON PRICES.

Plumbers' Supplies.—The depressing effect of the prolonged spell of excessive heat is reflected in the plumbing and steam fitting trade, where business transactions have been of a very languid sort during the past week. The intervention of the national holiday, too, has tended to make business dull. Consequently trade with the jobbing houses in this vicinity was reduced to a minimum. Nor is this condition at all unwelcome to the jobbers, for what with the enervating weather and the difficulty of securing goods from the makers, the jobber's life has not been entirely a happy one in the near past. Nothing of importance has occurred in the trade since our last report. Prices continue strong all along the line, and the scarcity noted in our previous reports in connection with several lines of goods is as pronounced as ever.

Lead Pipe and Sheet Lead.—Under date of July 1, 1901, Tatham & Brothers, New York, issue announcement of the following cash prices for Lead Pipe, Sheet Lead, &c., subject to the regular discount of 20 per cent. to the trade:

	Per pound.
Lead Pipe	6½c.
Sheet Lead	7¼c.
Tin Lined Lead Pipe	12½c.

Tinware, Galvanized Ware, &c.—The manufacturers of Tinware, pieced, stamped and japanned, galvanized and japanned Sheet Iron Goods, are still working in harmony, the prices decided on several weeks ago, covering an average advance of about 10 per cent., being well maintained. The necessary force, supervised by a central authority, are working out a system of prices based on the net figures determined on last month. It is the expectation that a return to the list and discount method will be made, an announcement of which will probably be made within the next week or two, the plan in contemplation being fixed base discounts with extras.

American Screw Company.—With the beginning of the last half of the year the American Screw Company, Providence, R. I., are bringing prominently to the attention of the trade their discounts on the various goods of their manufacture. The quotations on some of the leading lines are as follows:

	Discount.
Flat Head Iron Screws	90 %
Round and Oval Head Iron Screws	87½ %
Drive Screws	90 %
Flat and Round Head Iron or Brass Machine Screws	50 %
Fillister Head Iron or Brass Machine Screws	40 %
Norway Philadelphia Tire Bolts	82½ %
Eagle Philadelphia Tire Bolts	85 %
Bay State Tire Bolts	77½ %
Flat and Round Head Stove Bolts	77½ %
Stove Rods	65 %
Sink Bolts	77½ %
Rivets, Tinners,' Coopers,' &c	70 %
Hand Rail Screws	60 and 10 %

Refrigerators.—The demand for Refrigerators is very active, taxing all the efforts of the factories to meet it. Prices are strong, and in many cases such goods command a sharp premium over market rates when quick delivery is required. The spell of torrid weather throughout the country naturally has given a sharp stimulus to the demand for Refrigerators, as to all hot season goods.

Wire Nails.—The market for Wire Nails in New York is without change. Consumers are not disposed to buy beyond their current needs. Small lots of Wire Nails from store are quoted at $2.60 a keg.

Cut Nails.—Only a moderate demand for Cut Nails is being experienced in the New York market. Small lots from store rule at $2.25 per keg.

Wire.—The consumption of Plain Wire continues enormously heavy and is larger than ever before; consequently the mills are three or four weeks behind on deliveries. The heavy gauges of Wire are almost impossible to get. Prices are firm at 2.60c. for Plain Wire and 3c. for Galvanized.

Window Glass.—The Window Glass market is devoid

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of new features. The demand is light, and prices are likely to remain unchanged until more activity is shown on the part of buyers.

White Lead.—The demand for White Lead in Oil is fair, but shows a falling off in comparison with previous weeks. The advance of the season and the extreme hot weather have combined to produce these results. Small lots of White Lead in Oil are unchanged in price, being quoted at 7 to 7¼ cents per pound.

Linseed Oil.—A further advance of 7 cents per gallon in the price of Linseed Oil was announced on July 1. This brings the retail price of City Raw Oil up to 78 to 79 cents per gallon. Boiled Oil is 2 cents per gallon advance on Raw. The demand continues good, notwithstanding the advance, as purchasers generally have not been buying beyond immediate requirements. It is rumored that the supply of City Oil is limited and insufficient to supply the requirements at the present rate of consumption to the next crop season. Under such conditions, further advances in prices would not be surprising.

Spirits Turpentine.—The Turpentine market has been a declining one, owing to lower prices in the South and the extreme heat at this point. The local demand is dull, and moderate quantities of Turpentine are quoted from store at 37½ to 38 cents a gallon.

Old Rubber.—A fairly active demand for Old Rubber is noted, and prices generally are firm. Dealers in New York and vicinity are paying about the following figures:

Car Springs, ton lots, per lb	4¾c.
Rubber Shoes, less than carloads, per lb	7¾c.
White Wringer Rolls, per lb	7¾c.
Inside Bicycle Tubing, per lb	21 c.
Outside Tubing, per lb	7 c.

Mond Fuel Gas in Great Britain.

British commercial and scientific circles, says United States Consul James Boyle of Liverpool, England, are much interested in a discovery made by Dr. Ludwig Mond, of the great chemical firm of Bruuner, Mond & Co., Limited, whose headquarters are at Northwich, Cheshire. This discovery is a gas for furnaces and gas engines, which, it is claimed, can be supplied to consumers at a maximum price of 4 cents per 1000 cubic feet. Public attention has been drawn to this discovery by the recent application of a number of leading manufacturers in the South Staffordshire district for a bill in Parliament to give the necessary legal authority to erect plants, construct mains, &c., to supply an area of 135 square miles. The bill has been read twice in the House of Commons and has passed through the committee stage successfully, so that the scheme will, in all probability, be in actual operation within the next few years. Five generating stations are to be established, and from these the gas will be conveyed, under pressure in underground pipes, to the various manufacturers in the district for use in furnaces and gas engines, but not for illumination. Mond gas is a producer gas, made from the cheapest class of small coal and dust, commonly called "bituminous slack." Dr. Mond discovered a process by which this cheap slack can be converted into a clean gaseous fuel in such a way that a very large proportion of the nitrogen of the coal is recovered (as ammonia) and converted into sulphate of ammonia, which is a very valuable manure and fertilizer. The distinguishing features of the Mond process are:

1. The utilization of cheap bituminous slack.

2. The recovery of 90 pounds of sulphate of ammonia (value at present $1.94) for every ton of slack gasified.

3. Low temperature working, so that no clinkers are formed in the producer, and the ammonia is not destroyed.

4. Very perfect regeneration of heat by an ingeniously designed system, using water as a heat carrier.

5. The production of a clean gas of extremely uniform quality, free from tar and grit, and of a higher calorific value than most other producer gases.

Mond gas is not a lighting gas; it burns with a pale blue flame and has a much lower heating value than illuminating gas. It is a gaseous fuel, adapted for wholesale use as a heating and power agent, and the gas engines at Winnington, Cheshire, using Mond gas, hold the world's record for economy and for long and continuous runs. An experimental open hearth steel furnace has been worked with excellent results, using Mond gas, and the gas is in daily use for glass melting, ore roasting, many kinds of furnace work, evaporating liquids, heating buildings, &c.

What will probably be one of the largest buildings of its kind in this country at least is the structure now in course of erection at Schenectady, N. Y., to be used as the offices of the General Electric Company. It will be over 200 feet in length, more than 100 feet wide and five stories in hight, and will be equipped with every modern appliance in regard to heating, lighting, ventilation and sanitation. The cost of the structure will be in the neighborhood of $250,000, and it will have 100,000 square feet of floor space.

CONTENTS.

	Page.
Editorials—	
The Sheet Mill Strike	29
Tenement House Improvement in New York	29
The Carnegie Technical School	30
Austrian Commercial Expedition	30
Acetylene Stoves and their Application	31
Monitor Furnaces	32
Kalamazoo Stove Company	32
The New Model Oak	32
The Negro as a Molder	32
The Independent Stove Pipe Radiator. Illustrated	33
The Pioneer Stove Company	34
Odd Plates	34
Vulcan Club Goes to the Pan-American Exposition	34
Arkansas Retail Hardware Dealers' Association	35
The Modern Ice Pick. Illustrated	35
The Household Mangle No. 21. Illustrated	36
A New Locomotive	36
Original Measuring Spoons. Illustrated	36
Papers for Engineers' Meeting	37
Good Fittings Wanted in India	37
Canadian Master Plumbers	37
Glauber Brass Goods	37
The Henderson-Thermo Boilers	37
The Thomas Acme Air Washer and Purifier. Illustrated	38
New York City Notes	39
Air Valve for Vacuum Heating Systems. Illustrated	39
Heating and Plumbing Notes	40
New Firms and Changes	41
International Exhibition of Modern Art Products	41
The Tin Plate Scale	42
The Sheet Mill Situation	43
Sharon Tin Plate Company	44
The Parkersburg Iron and Steel Company	44
The Quick Meal Paint Burner. Illustrated	44
Flashings	45
Trade Notes	45
The Molders' Conference	46
Electric Fire Hazard	46
To Weld Copper	46
Fire Test of Wire Glass	46
To Clean Rusted Iron Work	46
The Letter Box—	
Trouble with Pattern for Ship's Ventilator. Illustrated	47
Does the Ohio Law Require Outside Air?	48
Why Did the Heater Burst? Illustrated	48
A Roofing Problem	48
Trade Report—	
Market Summary	49
Metal Market	49
The Pig Iron Market	50
Chicago Report	50
The Hardware Trade	51
Notes on Prices	51
Mond Fuel Gas in Great Britain	52
Metal and Miscellaneous Prices	53
Labor Exchange—	
Help and Situations Wanted	57

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED JULY 5, 1901

The following New York quotations are for small lots:

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots.....₩ lb, 37¢
100-lb lots.....₩ lb, 35¢
Aluminum Sheet, B. & S. gauge.
In lots of 50 lbs or more.

Wider than.....	6-in.	14-in.	24-in.
And including.....	14-in	24-in.	30-in.
	₩ lb	₩ lb.	₩ lb.
Nos. 13 to 19.....	$0.42	$0.44	$0.47
" 20.....	.44	.46	.49
" 21 to 23.....	.46	.48	.51
" 24.....	.46	.50	.53
" 25.....	.47	.51	.54
" 26.....	.47	.54	.59
" 27.....	.48	.57	.62
" 28.....	.48	.57	.64
" 29.....	.49	.60	.69
" 30.....	.50	.64	.77

Note.—Lots of less than 50 lbs 5¢ ₩ lb extra.

Antimony—

Cookson.....₩ lb. 10½@11¢
Hallett's.....₩ lb, 8¾@9½¢
U. S.....₩ lb, 8¾@9¼¢

Brass—Planished.....net

Roll and Sheet.....15@20% off

Brass and Copper Tubes

Brazed Brass Tubing—

Brown & Sharpe's Gauge the Standard.

List Feb. 26, 1896.

Plain Round Tube.	Per lb.	
¾-in. up to 2-in.	$0.35	30@35% off
⅝-in. up to ¾-in.	.36	
½-in. up to ⅝-in.	.38	
⅜-in. up to ½ in.	.41	
5-16-in. up to ⅜-in.	.48	
¼-in. up to 5-16-in.	.65	
3-16-in. up to ¼-in.	1.00	
⅛-in. up to 3-16-in.	1.50	
Smaller than ⅛-in.	Special	
3-in. and larger	Special	
2-in. to 3-in. to No. 19, inclusive.	.38	

Copper & Bronze Tubing—

3¢ ₩ lb more than Brass.

Conductors—

Corrugated. *Round or Square.*—

Galvanized ½ or more, N'st'd.....70&5%
" Not Nested.....70&2½%
" Plain Round, ½ or more, Nested.....70&5%
Galvanized, Plain Round, Not Nested. 70&2½%

Spiral Riveted.

Galvanized.....40%
See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—See *Strainers, Conductor.*

Copper—

Lake Ingot.....17¼@17⅝¢
Casting.....16¼@17 ¢
Sheet and Bolt.....21¢ ₩ lb basis
Cold Rolled Sheets.....22¢ ₩ lb basis
Cold Rolled and Polished Sheets..... 23¢ basis
Planished Sheets.....24¢ basis
Bottoms, Pits and Flats.....₩ lb 25¢ basis

Eaves Troughs—

List Feb. 1, 1895.
Lap or Slip Joint, Galvanized, in crates 75&10%

Eave Trough Mitres—

Lap or Slip Joint.....list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin.....30%
Galvanized.....30%
Perfect Elbows.....40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz
No. 2.	.65	.70	.75	.80	.85 "
No 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Corrugated

Round or Square.

Galvanized.....60%

Gasoline—See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 10.....	₩ lb 3.30...	3.35¢
Nos. 18 to 21.....	₩ lb, 3.4 1....	3.45¢
Nos. 22 to 24.....	₩ lb, 3.50....	3.55¢
Nos. 25 and 26...	₩ lb, 3 60....	3.65¢
No. 27 ...	₩ lb, 3.70....	3.75¢
No. 28 ...	₩ lb, 3.80....	3.85¢

Russia, Planished, &c.

Genuine Russia, according to assortment.....₩ lb 10½¢
Do. Stained.....6¢@10¢
Patent Planished. ₩ lb A. 9¼¢; B, 8¾¢ net

Galvanized.

Nos. 10 to 16.....	₩ lb, 12¢	62½@65% off
Nos. 17 to 21.....	₩ lb, 13¢	
Nos. 22 to 24.....	₩ lb 14¢	
Nos. 25 to 26.....	₩ lb, 15¢	
No. 27.....	₩ lb, 16¢	
No. 28.....	₩ lb, 17¢	
No. 29.....	₩ lb, 19¢	
No. 30.....	₩ lb, 21¢	

36 in. 1¢ ₩ lb higher

Kerosene—See *etroleum Products*

Lead—

American Pig.....4.60@4.62½¢
Bar.....5⅛@5¼¢
Pipe.....6½¢.....24% off
Tin Lined Pipe.....12½¢.....20% off
Block Tin Pipe.....40¢.....20% off
Sheet Lead, Roll rolls... 7¼¢ .....20% off
Sheet Lead, cut.....7¾¢.....20% off
Old Lead in exchange, 1¼¢ ₩ lb.

Mitres, Eave Trough—See *Eave Trough Mitres.*

Nickel—

Per lb.....60@65¢

Paints, Oils, &c.—

Lead, White, Atlantic and Jewett's. 7¼¢
Lead, Amn. White, in oil..... 7@7¼¢
Lead, Red, bbls. and ⅝ bbls..... 7@7¼¢
Lead, Red, kegs..... 7@7¼¢
Linseed Oil:
Raw, ₩ gal.....78@79¢
Boiled.....80@81¢
Spirits Turpentine:
In bbls.....37½@38¢
In cases.....45½@ 46¢
Putty:
In barrels and ½ bbls.....2½
In tin cans.....3½¢
In bladders.....2¼¢

Palm Oil. 1500 lb casks.

Fancy Lagos.....₩ lb 6 ¢
Clarified.....₩ lb 5¼¢
Accra.....₩ lb 5½¢
Half Jack.....₩ lb 5¼¢

Petroleum Products—

In Barrels (Barrel Included)
Stove Gasoline.....₩ gal. 12½@13¢
Kerosene.....₩ gal. 13@13½¢

Pipe, Drain.....40%

Pipe, Spiral—See *Conductors*

Registers—

List Feb. 1, 1899.
Black Japanned.....50&10%
White Japanned.....40&10%
Nickel Plated.....50&10%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze.....40%
Electroplated in Brass, Bronze or Copper.....40%
White Porcelain.....20%
Solid Brass and Bronze Metal.....20%

Roofing Material—

Heavy Single Ply Tar Felt,..... ₩ ton $30.00
2 Ply Roofing Felt.....₩ roll, 108 sq. ft. 65¢
3 Ply Roofing Felt....₩ roll, 108 sq. ft. 85¢
Roofing Pitch ₩ bbl.....$2 38

Rosin

(Barrels of 280 lb. Barrels weigh actually about 400 lb).
Common and Good—Strained.
Rosin, C. & D.....₩ bbl. $1.55 @$1.60
Rosin, E. & F.....₩ bbl. 1.65 @ 1.70
Rosin, G. & H.....₩ bbl. 1.75 @ 1.85
Rosin, I. & K.....₩ bbl. 2.00 @ 2.40
Rosin, M. & N.....₩ bbl. 2.65 @ 3.00

Seamless Brass Tubes—

Net List, February 6, 1899.

Shoes and Elbows—See *Elbows and Shoes.*

Slate Roofing—

According to size, f. o. b. cars, Quarry Station.
Pennsylvania:
Best Bangor, ₩ sqr. .....$3.25@$4.50
No. 1 Bangor Ribbon, ₩ sq 3.00@ 3.50
Pen Argyle, ₩ sqr. ..... 3.00@ 3.60
Peach Bottom, ₩ sqr..... 4.85@ 5.60
No. 1 Boys, ₩ sqr..... 3.35@ 3.55
No 1 Chapman Keystone, ₩ sqr..... 3.25@ 4.25
Vermont:
Sea Green, ₩ sqr.....$2.00@$3.00
Purple, ₩ sqr..... 3.75@ 4.25
No. 1 Eureka, Unfading Green, ₩ sqr..... 3.25@ 4.25
Red, ₩ sqr..... 6.50@11.00
Maine:
Brownville, Unfading Black:
No. 1 quality.....$5.25@7.50
No. 2 quality.....$4.25@6.00

Solder—

½ & ⅓ guaranteed.....18¾@19¼¢
No. 1.....15 @17¾¢
Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Concentrated Soldering Flux.
f.o.b. New York.
In barrels, ₩ lb.....4¢
Smaller quantities, ₩ lb.....5¢
Eureka Soldering Flux—Triple Strength.
In barrels, ₩ lb..... 3 ¢
Smaller quantities, ₩ lb.....3½¢
Eureka Soldering Flux—Extra Concentrated
In barrels, ₩ lb..... ....4½¢
Smaller quantities, ₩ lb.....5 ¢
Eureka Soldering Flux—Crystal.
In 100-lb cases, ₩ lb.....7¢
Gedney's Soldering Fluid.
In carboys or barrels, ₩ lb.....2¢
$1.50 for carboy or barrel; money refunded when returned.
Lennox Soldering Fluid.
In barrels, ₩ lb.....2¢
In carboys, ₩ lb.....3¢
Perfection Soldering Flux.
No charge for package.
Bbls. about 500 lb, ₩ lb.....3¢
½ bbls., about 300 lb, ₩ lb.....3½¢
Kegs, about 110 lb, ₩ lb.....3½¢
Kegs about 55 lb, ₩ lb.....4¢
Yager's Soldering Salts.
1 lb bottles, each.....60%
5 lb bottles, ₩ lb.....40%

Soldering Coppers—

Per lb.....22@24¢

Spelter—

Western Spelter.....4.45@4½¢

Spiral Pipe—See *Conductors.*

Stove Pipe Elbows—See *Elbows, Stove Pipe.*

Stove Trucks—See *Trucks, Stove*

Strainers, Conductor—

Galvanized.....50%

Tin Pigs and Bars—

Banca, pigs, ₩ lb.....29½@29¾¢
Straits, pigs, ₩ lb.....29¼@29½¢
Straits, in bars ₩ lb.....30¼@30½¢

Tin Plates, American Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:		
IC,	14 x 20.....	$5.75
IX,	14 x 20.....	8.25
IXX,	14 x 20.....	9.50
IXXX,	14 x 20.....	10.75
IXXXX,	14 x 20.....	12.00
Melyn Grade:		
IC,	14 x 20.....	6.25
IX,	14 x 20.....	7.75
IXX,	14 x 20.....	9.00
IXXX,	14 x 20.....	10.25
IXXXX	14 x 20.....	11.50
Allaway Grade:		
IC,	14 x 20.....	5.50
IX,	14 x 20.....	6.60
IXX,	14 x 20.....	7.70
IXXX,	14 x 20.....	8.80
IXXXX,	14 x 20.....	9.90

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20.....	$4.90
" "	IX, 14 x 20.....	$6.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 lb.....	5¢
95 lb.....	10¢
90 lb.....	15¢
85 lb.....	20¢

Terne Plates—

N. B.—The following prices are for IC, 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 lb coating and $2.50 to $3 00 advance for 15 lb and upward.

About 40 lb coating.....	$15.50@16.00
About 30 lb coating.....	14.25@15.25
About 20 lb coating.....	12.25@13.25
About 15 lb coating.....	10.75@11.25
About 8 lb coating.....	9.50

Boiler Plates, American—

IXX, 14 x 26..(112 sheets).....	$12.50
IXX, 14 x 28..(112 sheets).....	13 50
IXX, 14 x 31..(112 sheets).....	15.00

Troughs Eave—See *Eave Trough*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00
Steel Lock Frame, per doz..... 18.00
Daisy Improved pattern, ₩ doz... 18.00

Tubing—

Tin.....50% | Galvanized.....50%
Fittings for do.....40%

Zinc—

600 lb casks ₩ lb.....6¾¢
Per lb.....7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Fittings—

List of Oct 7, 1899

Cast Iron Fittings, Black and Galvanized, Standard sizes.....60@60&10%
Cast Iron Bushings and Plugs.65&10@70%
Cast Iron Flanges.....65&10@70%
Malleable Iron Fittings.....55@60%
" " Bushings.....65&10@70%
" " Unions.....65&10@70%
Wrought " Nipples.....65&10@70%
" " Couplings... ...65&10@70%
" " Long Screws...65&10@70%

Cast Iron Soil Pipe—

List Feb. 25, 1901.
2 to 6 inch inclusive.
Standard.....55&10@60%
Extra Heavy.....65&10@70%
All Fittings.....70&5@70&10%

Merchant Wrought Iron Pipe—

List Feb. 15, 1900
Random Lengths.

	Black	Galv
⅛ to ⅛ inch.....	50&5%	40%
¼ to 10 inch.....	60%	40&10@50%
11 and 12 inch.....	50%	35%

Extra Strong Pipe—

Random Lengths

	Black	Galv.
⅛ to ⅛ in.....	45%	30%
¼ to 2 in.....	45%	30%
2½ to 8 in.....	45%	30%

Valves Cocks, &c.—

Iron Body Valves.....65&5@70%
Air Cocks and Radiator Air Cocks.....70@70&5%
Soldering Unions.....70@70&5%
" Nipples.....70@70&5%
Brass Unions (Rough and Finished)..65&5@70%
Jenkins Bros.':
Iron Body Valves, except Gate Valves 55%
All Iron Valves, except Gate Valves.. 40%
Iron Body Gate Valves.....50%
All Iron Gate Valves.....35%
Iron Cocks, all Iron.....60&10%
" " with Brass Plugs.....60%
Brass Globe, Angle and Cross Valves... 65&10@70&5%
" and Angle Valves, hose outlet.....65&10@70%
Brass Garden Hose Valves.65&10@70&5%
" Horizontal, Vertical and Angle Check Valves.....65&10@70%
Brass Safety Valves.....55%
" " " Low Pressure...55%
Brass Radiator Valves ... 65&10@70&5%
" " Jenkins.....55%
Brass Jenkins' Globe, Angle, Cross and Corner Valves.....55%
Brass Jenkins' Safety and Check Valves.....40%
Brass Jenkins' Gate Valves.....50%
Brass Steam Cocks.....65&5&70%
" Gas Meter and Union Meter Cocks.....65&5@70%
Brass Fittings, Rough.....65&5@70%
" " Finished.....65&5@70%
" Bushings.....65&5@70%

Plumbers' Brass Work—

List of December 7, 1898.

Ground Key Work:
Rough Bibs and Stops.....65@65&10%
Finished Bibs.....60&10@65%
Rough Stop and Stop and Waste Cocks.....70@70&10%
Rough Stop and Stop and Waste Cocks, Patented.....60&10@65%
Compression Bibs.....65@65&10%
" " Flanged.....70%
Compression Bath Cocks and Double Bath Cocks.....70@70&10%
Compression Basin Cocks....65@65&10%
Fuller Bibs.....70@75%
Fuller Basin Cocks, Nos. 1 to 4....70@75%
Fuller Bath Cocks, No. 4½.....$2.25 net
Chain Stays.....60@65%
Iron Boiler Couplings:

	Lead Plug.	Iron Pipe.
Plain Face....₩ set	$1.00	$1.10
Ground Face..₩ set	$1.05	$1.15

Basin Plugs.....60@60&10%
Sink or Bath and Wash Tray Plugs.... 60@60&10%
Basin Clamps.....75@75&5%

Bath Tubs—

Cast Iron Enamels Bath Tubs.
List of March 26, 1900.
Regular Patterns, Guaranteed, Complete Line.....40@40&10%
All High Grade and Special Pattern (except as below).....20%
"Diana" and "Brighton."....20%
Non-Guaranteed Brands, complete line.....40%
Steel Clad Copper Lined Bath Tubs, list of Feb. 1, 1899.....45@50%
Solid Porcelain Bath Tubs.....20%
Solid Copper, list of Feb. 1, 1899.....20%

Boilers—

Standard Boilers:
30 gal.....65@65&10%
35 and 40 gal.....65@6 &5%
Other sizes up to 52 gal....50&10@60%
52 gal and above.....50&10@60%
Extra Heavy Boilers:
18 to 52 gal.....50&10@60%
53 gal. and above.....40&10@45%

Sinks—

	Cast Iron—Black.	Galv.
Sinks, Square, Half Round and Corner.	50&5%	50&10@60%
Sink Legs.	50&5%	50&10@60%
Sink Backs	50&5%	50&10@00%

Wrought Steel—

New Era, Galv'd and Enameled.. 70&5%
New Era, Painted.....50&10%
L. & G.....50%

Miscellaneous—

Earthenware, List of July 17, 1899.....
Basins, Urinals and Honners.....40%
Closet Bowls, Sundries, Washouts and Pedestals.....40%
Drawn Lead Traps, List of June 3, 1901.....40&10@50%

ALPHABETICAL LIST OF ADVERTISERS.

Allbe, Chas. A..... 24
American Furnace Co..... 16
American Hardware Mfg.Co. 69
American Sheet Steel Co....1&64
American Tin Plate Co..... 64
Ammidon & Co 58
Arcade Mfg. Co..... 23
Armstrong Mfg. Co..... 27
Asheville Mica Co..... ... 20
Asphalt Ready Roofing Co .. 65
Auld & Conger..... 59
Barstow Stove Co..... 72
Beckwith, P. D., Est. of..... 2
Berger Bros. Co.....21&61
Berger, L. D..... 69
Berger Mfg. Co 66
Bergstrom Bros. & Co..... 16
Bertsch & Co..... 70
Bliss, E. W. Co..... 70
Blodgett, G. S. Co..... 20
Boss Washing Machine Co.... 60
Boynton Furnace Co..... 6
Brand Stove Co..... 15
Bray, J. & Co..... 60
Bridgeport Crucible Co..... 22
Bridgeport Stove Works..... 19
Brobard Co..... 21
Brooklyn Metal Ceiling Co.... 62
Bruce & Cook.....64&72
Burton, W. J. & Co.... 68
Butler Steel Furnace Co..... 18
Callahan, Geo. & Co 62
Canton Machine & Mfg.Co... 67
Canton Steel Roofing Co..... 21
Carroll, J. B..... 24
Champion Steel Range Co.... 19
Chency, S. & Son 1
Cincinnati Stamping Co. 68
Clark, Henry N. Co..... 21
Clark Novelty Co..... 69
Clark, Quien & Morse..... 62
Clason Arch. Metal Works... 58
Clayton & Lambert Mfg. Co.. 27
Clough, R. M..... 71
Colwell Lead Co..... 26
Cooney & Geiger..... 61
Cope, Geo. W 21
Cortright Metal Roofing Co... 68
Crosby Steam Gage & Valve Co..... 1
Crown Ventilator Co..... 61
Curtis & Curtis Co..... 26
Dean Boiler Co..... 23
Detroit Stove Works..... 16
Dighton Furnace Co.....1&11
Dixon, Jos. Crucible Co..... 24
Double Truss Cornice Brake Co 68
Dowman Mfg. Co..... ... 61
Drake, W. H..... 17
Drouve, G. Co..... 68
Edwards, J. H..... 24
Eller, J. H. & Co..... 67
Energy Elevator Co..... . .. 23
Enterprise Stove Co..... 11
Esterbrook's, R. Sons..... 26
Farnan Brass Works..... 25
Fenn, Geo. E..... 61
Floyd, Wells & Co..... 15
Follansbee Bros. Co..... 1
Forest City F'dry & Mfg. Co.. 17
Foster, F. W Mfg. Co..... 24
Friedley & Voshardt..... 66
Frink, I. P..... 72
Front Rank Steel Furnace Co 11
Galt, John & Sons..... 60
Garry Steel & Iron Co..... 65
Garvin Machine Co 68
Genuine Bangor Slate Co..... 63
Globe Ventilator Co..... 61
Gobeille Pattern Co..... 20
Gordon, W. J..... 71
Gorton & Lidgerwood Co..... 1
Graham, Chas., Chemical Pottery Wks..... 27
Gray, W. A..... 58
Greene, W. F., Est. of..... 23
Grimm, G. H. & Co..... 1
Gummey, McFarland & Co... 63
Gurney & Co..... 20
Gurney Heater Mfg. Co. 16
Hamlin, G. R..... 59
Harrington & King Perforating Co..... 54
Hart & Crouse Co..... 12
Hess-Snyder Co..... 8
Hessler, H. E. Co..... 22
Hoffman, Geo. W..... 18
Howes, S. M. Co..... 21
Howson & Howson 59
Hungerford, U. T., Brass & Copper Co..... 71
Incandescent Light & Stove Co..... 24
Independent Register Co..... 18
International Correspondence Schools..... 58
International Heater Co..... 8
Jamney, Steinmetz & Co..... 68
Jenkins Bros..... 1
Johnson, E. J. & Co..... 60
Joliet Stove Works. 9
Josselyn & Co..... 58
Keene, Geo. C. & Co 71
Kelsey Furnace Co..... 28
Kemp, C. M. Mfg. Co..... 27
Kewanee Boiler Co..... 14
Kieley & Mueller..... 1
Koven, L. O. & Bro..... 23
Lamb & Ritchie..... 27
Landers, Frary & Clark..... 25
Lawrence-Letts Elbow Co.... 23
Lennox Machine Co..... 20
Livermore, H. F..... 26
McClure & Co..... 72
McLain, J. H. Co..... 19
McLeod & Henry Co..... 1
McSherry, Chas..... ... 69
Magee Furnace Co 1
Marcy Stove Repair Co..... 22
Marlin & Co..... 66
Marston, I. G. & Co..... 27
Meilink Mfg. Co..... 26
Meurer Bros. Co..... 63
Meyer, F. & Bro. Co 15
Michigan Stove Co.....4&5
Millar, Chas. & Son Co..... 72
Millers Falls Co..... 71
Miner & Peck Mfg. Co 24
Montross Metal Shingle Co.... 62
Morgan & Co..... 27
Mueller, L. J. F'ce Co..... 12
Munsell, E. & Co..... 20
National Enameling & Stamping Co..... 28
National Pipe Bending Co.... 17
New Haven Novelty Machine Co..... 27
Newton, Wm. M..... 1
New York Iron Roofing & Corrugating Co..... 62
New Orleans Rfg. & Metal Works..... 65
Niagara Machine & Tool Wks. 69
Noyes & Nutter Mfg. Co..... 17
O'Halloron & Jacobs..... 60
Ohl, Geo. A. & Co..... 70
Osborn, J. M. & L. A 65
Ostrander, W. R. & Co..... 71
Peck, Stow & Wilcox Co..... 69
Perkins, J. L. & Co..... 22
Phila. Machine Tool Co..... 71
Pierce, Butler & Pierce Mfg. Co..... 18
Pittsburgh Stove & Range Co. 8
Pocock, Oliver..... 68
Portsmouth Stove & Range Co.... 10
Presbrey Stove Lining Co..... 22
Reeves Mfg. Co..... 62
Rhodes, L. E. Co..... 25
Richmond Stove Co..... 10
Ringen Stove Co..... 7
Robinson, J. M. & Co..... 71
Rochester Radiator Co..... 20
Rutland Fire Clay Co..... 23
Sackman, F. A..... 58
Safety Furnace Pipe Co..... 16
Salem Nail Co..... 61
Sanborn, John..... 65
Saunders', D. Sons..... 25
Schill Bros. Co..... 11
Schneider & Trenkamp Co.... 6
Schratwiesers Metal Lath Works..... . 65
Schwab, R J. & Sons Co..... 14
Schwerdtle Stamp Co..... 59
Seavey Mfg. Co.....58&30
Snaffer, John P..... 20
Sheppard, Isaac A. & Co..... 1
Silver & Co..... 59
Smith, H. B. Co..... 13
Smith & Anthony Co..... 72
Smith & Thayer Co 12
Smith-Warren Co..... 67
Special Notices..... 58
Sperry, D. R. & Co..... 59
Stamford Foundry Co 18
Stanton Heater Co..... 11
Stiles & Parker Press Co..... 70
Stocking, E. B..... 59
Stolz, Frank D..... 17
Stuber & Kuck..... 24
Taylor & Boggis Fdry. Co.... 21
Taylor Co., N. & G..... 72
Townley, H P..... 58
Trimont Mfg. Co..... 24
Troy Nickel Works..... 22
Union Mfg. Co..... 70
Valentine, M. D. & Bro. Co... 22
Vance Boiler Works..... 17
Vanderman Plumbing & Heating Co..... 25
Vedder Pattern Works..... 21
Vogel, William & Bros 67
Vulcan Metal Refining Co.... 58
Vulcan Western Co..... 58
Washburne, E. G. & Co.....61&69
Wayne, Anthony Mfg Co.... 59
Weir Stove Co.....A.... 72
Wheeler, W. A..... 69
Willis Mfg. Co..... 62
Wireton Heating Co..... 18
Wister, L. & R. & Co 72
Wolff, L. Mfg. Co..... 26
Wood & Bishop Co..... 18
Wood, Alan Co..... 65
Zero Valve & Brass Mfg. Co.. 24

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Eastern Office, 284 Pearl St., NEW YORK. **217 North Union St., CHICAGO, ILLS., U.S.A.**

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Carroll, J. B., Chicago, Ill.

Acetylene Gas Generators.
International Heater Co., Utica, N. Y.

Aluminum Ingots.
Janney, Steinmetz & Co., Phila., Pa.

Aluminum Scrap Buyers.
Janney, Steinmetz & Co., Phila., Pa.

Aluminum Sheets.
Janney, Steinmetz & Co., Phila., Pa.

Architectural Ornaments.
Friedley & Voshardt, Chicago, Ill.
Willis Mfg. Co., Galesburg, Ill.

Ball Cocks
Foster, F. W. Mfg. Co., Boston, Mass.

Black Plates.
American Tin Plate Co., New York.

Boilers, Range.
Koven, L. O. & Bro., 50 Cliff St., N. Y.
Wolff, L. Mfg. Co., Chicago, Ill.

Brass Goods
Farnau Brass Works, Cleveland, O.
Jenkins Bros., 71 John St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Brass Sheets, Rolls, &c.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N.Y.

Burners, Acetylene.
Carroll, J. B., Chicago, Ill.

Can Makers' Tools and Machines.
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.

Castings, Iron.
Cheney, S. & Son, Manlius, N. Y.

Ceilings, Metallic.
Berger Mfg. Co., Canton, O.
Brooklyn Metal Ceiling Co., Brooklyn, N. Y.
Canton Steel Roofing Co., Canton, O,
Dowman Mfg. Co., Atlanta, Ga.
Eller, J. H. & Co., Canton, O.
Friedley & Voshardt, Chicago, Ill.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Collar Drainers.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Coils.
National Pipe Bending Co., New Haven, Conn.

Conductor Pipe and Elbows.
Berger Bros. Co., Philadelphia, Pa.
Clark, Quien & Morse, Peoria, Ill.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
McClure & Co., Pittsburgh, Pa.
Marlin & Co., Pittsburgh, Pa.

Conductor Pipe Machines.
Canton Machine & Mfg. Co., Canton, O.

Copper, Roofing and Cornice.
Gummey, McFarland & Co., Phila., Pa.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N.Y.

Cornice Machinery.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl. Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.

Cornice Work, Galvanized Iron.
Garry Steel & Iron Co., Cleveland, O.
Marlin & Co., Pittsburgh, Pa.
New Orleans Rfg. & Metal Works, New Orleans, La.

Couplings. (*See Pipe Couplers.*)

Cut Offs, Rain Water.
Cooney & Geiger, Indianapolis, Ind.

Damper Clips.
Brohard Co., Phila., Pa.

Dampers.
Arcade Mfg. Co., Freeport, Ill.
Greene, W. F., Est. of, Troy, N. Y.
Howes, S. M. Co., Boston, Mass.
Taylor & Boggis Foundry Co., Cleveland, O.
Troy Nickel Works, Troy, N. Y.

Die Stocks.
Curtis & Curtis Co., Bridgeport, Ct.

Drop Hammers.
Bliss, E. W. Co., Brooklyn, N. Y.
Toledo Mach. & Tool Co., Toledo, O.

Dumb Waiters.
Energy Elevator Co., Phila., Pa.

Eave Troughs.
Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Co., Canton, O.
Clark, Quien & Morse, Peoria, Ill.
Eller, J. H. & Co., Canton, O.
Marlin & Co., Pittsburgh, Pa.

Eave Trough Hangers.
Berger Bros. Co., Phila., Pa.
Berger Mfg. Co., Canton, O.

Eave Trough Machines.
Canton Machine & Mfg. Co., Canton, O.
Marlin & Co., Pittsburgh, Pa.

Elbows, Stove Pipe.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
Reeves Mfg. Co., Canal Dover, O.

Enameled Ware.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Faucets.
Clark Novelty Co., Rochester, N. Y.
Landers, Frary & Clark, New Britain, Conn.

Fire Brick.
Preshrey Stove Lining Co., Taunton, Mass.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Pots.
Burgess Soldering Furnace Co., Columbus, Ohio.
Clayton & Lambert Mfg. Co., Detroit, Mich.
Wolff, L. Mfg. Co., Chicago, Ill.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Flue Stoppers
Stuber & Kuck, Peoria, Ill.

Forming Machines.
Pocock, Oliver, Cincinnati, O

Furnace Cement.
Perkins, J. L. & Co. Chicago.

Furnace Pipe and Fittings.
International Heater Co., Utica, N. Y.
Meyer, F. & Bro. Co., Peoria, Ill.
Osborn, J. M. & L. A., Cleveland, O.
Safety Furnace Pipe Co., Detroit, Mich.
Schaffer, Jno. P., Pittsburgh Pa.

Furnaces and Heaters.
Amer. Furnace Co., St. Louis, Mo.
Barstow Stove Co., Providence, R.I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Black, E. L. & Co., Mt. Vernon, O.
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Butler Steel Furnace Co., Butler, O.
Cory, Uzal & Co. 210 Water St., N. Y
Dean Boiler Co., Boston, Mass.
Dighton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Roversford, Pa.
Forest City Fdry. & Mfg. Co., Cleveland, Ohio.
Front Rank Steel Furnace Co., St. Louis, Mo.
Hart & Crouse Co., Utica, N. Y.
Hess-Snyder Co., Massillon, O.
Howes, S. M. Co., Boston, Mass.
International Heater Co., Utica, N. Y.
Kelsey Furnace Co., Syracuse, N. Y.
Lennox Machine Co., Marshalltown, Iowa.
Magee Furnace Co., Boston, Mass.
Meyer, F. & Bro. Co., Peoria, Ill.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
Noyes & Nutter Mfg. Co., Bangor, Maine.
Richmond Stove Co., Norwich, Conn.
Schill Bros., Crestline, O.
Schwab, R. J. & Sons Co., Milwaukee, Wis.
Sheppard, Isaac A. & Co., Phila., Pa.
Stamford Foundry Co., Stamford, Ct.
Stanton Heater Co., Martins Ferry, O.
Wireton Heating Co., Blue Island, Ill.
Wood & Bishop Co., Bangor, Me.

Gas Heaters. (*See Stoves and Ranges, Gas.*)

Gas Machines.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Granite Steel Ware.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Groovers.
Wheeler, W. A., Indianapolis, Ind.

Hack Saws.
Millers Falls Co., 28 Warren St., N. Y.

Heaters, Steam and Hot Water.
Barstow Stove Co., Providence, R.I.
Boynton Furnace Co., 207 Water St., N. Y.
Dean Boiler Co., Boston, Mass.
Dighton Furnace Co., Taunton, Mass.
Drake, W. H., Newark, N. J.
Gorton & Lidgerwood Co., 96 Liberty St., New York.
Gurney & Co., Boston, Mass.
Gurney Heater Mfg. Co., Boston, Mass.
Hart & Crouse Co., Utica, N. Y.
International Heater Co., Utica, N. Y.
Kewanee Boiler Co., Kewanee, Ill.
McLain, J. H. Co., Canton, O.
Magee Furnace Co., Boston, Mass.
National Pipe Bending Co., New Haven, Conn.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
Richmond Stove Co., Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith, H. B. Co., Westfield, Mass.
Smith & Anthony Co., Boston, Mass.
Smith & Thaver Co., Boston, Mass.
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Vance Boiler Works, Geneva, N. Y.

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National Enameling & Stamping Co., 78 Beekman St., N. Y.
Sperry, D. R. & Co., Batavia, Ill.

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Mellink Mfg. Co., Toledo, O.

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Smith & Anthony Co., Boston, Mass.

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Clad, V. & Sons, Phila., Pa.
Seavey Mfg. Co., Boston, Mass.

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Iron and Steel, Sheet. (*See Sheets, Iron and Steel.*)

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Amer. Sheet Steel Co., New York.

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Garry Steel & Iron Co., Cleveland, O.

Lath, Metallic.
Schratwiesers Metal Lath Works.

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Graham, Chas., Chemical Pottery Works, Brooklyn, N. Y.

Lead Pipe.
Colwell Lead Co., 63 Centre St., N. Y.

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Incandescent Light & Stove Co., Cincinnati, O.

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Asheville Mica Co., Asheville, N. C.
Munsell, Eugene & Co., 218 Water St., New York.

Milk Cans.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Oil Heaters. (*See Stoves and Ranges, Oil, Vapor and Gasoline.*)

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Howes, S. M. Co., Boston, Mass.

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Connors, Wm. Paint Mfg. Co., Troy, N. Y.

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Howson & Howson, Philadelphia, Pa.
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Lamb & Ritchie, Cambridge, Mass.
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Troy Nickel Works, Troy, N. Y.

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Vogel, Wm. & Bros., 37 to 47 S. 9th St., Brooklyn, N. Y.

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Garvin Machine Co., 257 Spring Street, New York.
Gordon, W. J., Philadelphia, Pa.
Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.

Pumps.
Hess-Snyder Co., Massillon, O.

Punching Machines.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Garvin Machine Co., 257 Spring Street, New York.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Toledo Mach. & Tool Co., Toledo, O.

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Burton, W. J. & Co., Detroit, Mich
Rochester Radiator Co., Rochester, N. Y.

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Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.

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Koven, L. O. & Bro., 50 Cliff St., N. Y.
Wolff, L. Mfg. Co., Chicago, Ill.

Reflectors.
Frink, I. P., 551 Pearl St., New York.

Registers.
Auer Register Co., Toledo, O.
Canton Steel Roofing Co., Canton, O.
Dighton Furnace Co., Taunton, Mass.
Independent Register Co., Cleveland, Ohio.
Seavey Mfg. Co., Boston, Mass.

Roofing.
Asphalt Ready Roofing Co., 136 Water St., N. Y

Roofing Cement and Paint.
Callahan, Geo. & Co., 218 Front Street, N. Y.
Connors, Wm. Paint Mfg. Co., Troy, N. Y.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Perkins, J. L. & Co., Chicago.

Roofing and Siding, Iron and Steel, Corrugated and Plain.
Berger Mfg. Co., Canton, O.
Burton, W. J. & Co., Detroit, Mich.
Canton Steel Roofing Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Garry Steel & Iron Co., Cleveland, O.
Gummey, McFarland & Co., Phila., Pa.
New Orleans Roofing & Metal Works, New Orleans, La.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Roofing Nails.
Salem Nail Co., 279 Pearl St., N.Y.

Roofing Slate.
Auld & Couger, Cleveland, O.
Bray, J. & Co., E. Bangor, Pa.
Galt, John & Sons, 253 Broadway, N.Y.
Genuine Bangor Slate Co., Easton, Pa.
Johnson, E. J. & Co., 38 Park Row, N.Y.
O'Halloran & Jacobs, Pittsburgh, Pa.

Sashes, Metal.
Smith-Warren Co., Boston, Mass.

Schools and Colleges.
International Correspondence Schools, Scranton, Pa.

Screens.
Harrington & King Perforating Co., Chicago, Ill.

Shears, Sheet Metal
McSherry, Chas., Pittsburgh, Pa.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.

Sheet Metal Machinery.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Canton Machine & Mfg. Co., Canton, O.
Clough, R. M., Tolland, Conn.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Garvin Machine Co., 257 Spring Street, New York.
Keene, Geo. C. & Co., Cincinnati, O.
McSherry, Chas., Pittsburgh, Pa.

SEE ALPHABETICAL INDEX, PAGE 54.

Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Pocock, O., Cincinnati, O.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.

Sheets, Galvanized.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O.
Taylor, N. & G. Co., Philadelphia, Pa.
Wood Alan Co., Philadelphia, Pa.

Sheets, Iron and Steel.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Taylor, N. & G. Co., Philadelphia, Pa.
Wood Co., Alan Philadelphia, Pa.

Shingles and Tiles, Metallic.
Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.

Shot.
Colwell Lead Co., 63 Centre St., N. Y.

Siding. *(See Roofing and Siding.)*

Skylights.
Canton Steel Roofing Co., Canton, O.
Drouve, G. Co., Bridgeport, Conn.

Slaters' Tools.
Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Snow Guards.
Clason Arch. Metal Works, Providence, R. I.

Solder.
Bruce & Cook, 186 to 190 Water St., NY.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Sanborn, J., 217 Water St., N. Y.
Taylor, N. & G. Co., Philadelphia Pa.

Soldering Furnaces.
Burgess Soldering Furnace Co., Columbus, Ohio.

Speaking Tubes and Whistles.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.

Specialties, Sheet Metal.
Vogel, Wm. & Bros., Brooklyn, N. Y.

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American Hardware Mfg. Co., Ottawa, Ill.

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Marcy Stove Repair Co., 74 Beekman St., N. Y.
Newton, W. M., Albany, N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Stove and Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.
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Stove Patterns.
Cope, G. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, O.
Vedder Pattern Works, Troy, N. Y.

Stove Pipe.
Reeves Mfg. Co., Canal Dover, O.
Stuber & Kuck, Peoria, Ill.

Stove Pipe Thimbles.
Cheney, S. & Son, Manlius, N. Y.
City Forge & Iron Works, Dayton, O.

Stove Repairs.
Clark, Henry N. Co., Boston, Mass.
Hessler, H. E. Co., Syracuse, N. Y.
Howes, S. M. Co., Boston, Mass.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trimmings, &c.
Greene, W. F., Est. of, Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trucks.
Arcade Mfg. Co., Freeport, Ill.
Hessler, H. E. Co., Syracuse, N. Y.
Howes, S. M. Co., Boston, Mass.

Stoves and Ranges.
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Bridgeport Stove Works, Bridgeport, Ala.
Champion Steel Range Co., Cleveland, Ohio.
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Enterprise Stove Co., Vincennes, Ind.
Floyd, Wells & Co., Royersford, Pa.
Grimm, G. H. & Co., Rutland, Vt.
Gurney & Co., Boston, Mass.
Hess Snyder Co., Massillon, O.
Joliet Stove Works, Joliet, Ill.
Magee Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Portsmouth Stove & Range Co., Portsmouth, O.
Richmond Stove Co., Norwich, Conn.
Ringen Stove Co., St. Louis, Mo.
Schill Bros. Co., Crestline, O.
Schneider & Trenkamp Co., Cleveland, O.
Sheopard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Stamford Foundry Co., Stamford, Ct.
Weir Stove Co., Taunton, Mass.

Stoves and Ranges, Gas.
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Ringen Stove Co., St. Louis, Mo.

Stoves and Ranges, Oil, Vapor and Gasoline.
Hessler, H. E. Co., Syracuse, N. Y.
Schneider & Trenkamp Co., Cleveland, O.
Ringen Stove Co., St. Louis, Mo.

Street Lamps, Gasoleue.
Merkel, H., St. Louis, Mo.

Tanks, Steel and Wood.
Edwards, J. H., 59 Park Place, N. Y.

Terne Plates.
American Tin Plate Co., New York.

Tinners' Tools, Machines and Supplies.
Berger, L. D., Philadelphia, Pa.
Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. O. & Co., Cincinnati, O.
McSherry, Chas., Pittsburgh, Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.

Tinners' Trimmings.
Vogel, Wm. & Bros. Brooklyn, N. Y.

Tin Plate.
American Tin Plate Co., New York.
Berger, L. D., Philadelphia, Pa.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

Tin Scrap.
Ammidon & Co., Baltimore, Md.
Gray, W. A., 26 Cortlandt St., N. Y.
Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co., Streator, Ill.

Tool Grinders.
Union Mfg. Co., Buffalo, N. Y.

Tools and Machines, Steam and Gas Fitters'.
Armstrong Mfg. Co., Bridgeport, Conn.
Curtis & Curtis Co., Bridgeport, Conn.
Livermore, H. F., Boston, Mass.
Saunders', D. Sons, Yonkers, N. Y.

Torches, Plumbers.
Clayton & Lambert Mfg. Co., Detroit, Mich.

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Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Morgan & Co., Chicago.

Ventilators and Chimney Caps.
Berger Bros. Co., Phila., Pa.
Crown Ventilator Co., Milwaukee, Wis.
Dowman Mfg. Co., Atlanta, Ga.
Fenn, Geo. E., Boston Mass.
Globe Ventilator Co., Troy, N. Y.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Washers, Valves, &c.
Marston, I. G. & Co., Boston, Mass

Washing Machines.
Boss Washing Machine Co., Cincinnati, Ohio.
Wayne Anthony Mfg. Co., Ft. Wayne, Ind.

Water Coolers.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Water Closets.
Colwell Lead Co., 63 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.

Water Heaters.
Adam, W. J., Joliet, Ill.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Water Lifts.
Rhodes, L. E. Co., Hartford, Conn.

Wind Gates.
Miner & Peck Mfg. Co., NewHaven, Ct.

Window Frames, Metal.
Smith-Warren Co., Boston, Mass.

Wiping Cloths.
Allbe, Chas. A., Springfield, Mass

SEE ALPHABETICAL INDEX, PAGE 54.

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DAVID WILLIAMS COMPANY, Publishers.

232, 234, 236 and 238 William Street, NEW YORK. 805 Fisher Building, CHICAGO.

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SUPERINTENDENT for enameling and stamping factory located in Pennsylvania; a good positon is open for an experienced man, competent to direct all departments in small factory and secure results. "A. S.," care *The Metal Worker,* New York. July 6

Practical PLUMBER who understands tinsmithing also; steady work and good wages paid the right man. B. Ungrodt, Washburn, Wis. July 6

FOREMAN in pieced tinware department who understands every detail of manufacturing and the economical management of help. Address, stating experience, when and where, age, nationality, reference and wages expected, S. C. Harvey, 21 Bellevue, Beacon street, Boston. July 6

First-class PLUMBER who can do tin work; steady employment; country town. "X. Y. Z.," care *The Metal Worker,* New York. July 6

A first-class SALESMAN to handle a line of warm air registers; prices and terms right. Box 76, *The Metal Worker,* New York. July 6

Live, experienced CORRESPONDENT for desk work in office of wholesale tin plate firm; state references and experience. "Experience," care *The Metal Worker,* New York. July 6

An experienced FOREMAN, to take charge of machine shop, press and die room; capable of designing and handling dies and pushing through work at lowest cost and lots of it. Apply by mail, giving age, experience and reference, "Gas & Gasoline Stoves," care *The Metal Worker,* 20-22 Pickering Building, Cincinnati, Ohio. July 6

A TINNER and FURNACEMAN; must be temperate; state experience. Stephenson, Lakewood, N. J. July 6

A man to estimate cornice and sheet metal work. Address, stating experience, &c., "S. J. D.," care *The Metal Worker,* 33 Mason Building, Boston, Mass. July 6

SKYLIGHT MEN and CORNICE MAKERS. E. Van Noorden Company, 944 Massachusetts avenue, Boston, Mass. July 6

A first-class STOVE SALESMAN at a good salary for territory west of the Missouri River; none other need apply. Address, giving reference, Box 206, Memphis, Tenn. July 6

Three TIN and SHEET IRON WORKERS; must be first-class and sober men; good wages; also one good cornice and skylight maker. Duluth Corrugating & Roofing Company, Duluth, Minn. July 6

At once, one good first-class TINNER; steady work to right party. Hagan & Schad, Marietta, Ohio. July 6

A first-class FOREMAN for shop; must thoroughly understand warm air, hot water, steam and hot blast heating; also competent to do estimating; a good solicitor and a hustler; references required. Address The Roberts Heating & Ventilating Company, 213 South Third street, Minneapolis, Minn. July 6

At once a strictly first-class, sober and reliable PLUMBER and TINNER; one that is also steam fitter preferred; steady work and good wages to the right man; only those thorough and competent need apply. D. W. Bovett, Pittsfield, Mass. July 6

At once, first-class TINSMITH for country tin shop; must be temperate and reliable; shop situated in village of 500 inhabitants; steady work to right kind of man. E. H. Mason, Woodhull, N. Y. July 6

SALESMEN calling on the stove trade can learn of a profitable side line by addressing Independent Register Company, Cleveland, Ohio. June 29

TRAVELING SALESMAN, thoroughly conversant with the tin plate and metal business. Merchant & Co., Incorporated, Philadelphia, Pa. June 29

At once, first-class TINNER and SLATER and all around jobber; good job for the right man. Bartholomew & Sivey, Ashley, Ohio. June 29

Two first-class SALESMEN who are well acquainted with the hardware and implement trade in Iowa and North Missouri, capable of selling first-class lines in pumps, stoves, hardware and implement specialties, can find a permanent and paying position by addressing, giving age, experience and references, to the Central Supply Company, 111 Second street, Des Moines, Iowa. June 29

A CORNICE CUTTER who can do all kinds of job work, slate roofing, &c.; state wages wanted. E. Power, Frankfort, Ky. June 29

Working FOREMAN for gas range department of a large foundry; one who has had experience with press work and all other details of construction; no experimenter wanted; services may not be required for several months if applicant so desires; give details as to salary, experience, &c. "L.," care *The Metal Worker,* New York. June 29

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An all around TINNER and good CORNICE MAN; one that understands laying out and erection of dust collectors, exhaust blow piping; must be quick, no other need apply. John H. Scharer, 2025 Canton avenue, Toledo, Ohio. June 29

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A practical and experienced STOVE and FURNACE SALESMAN wants to permanently represent some good house in territory adjacent to Minneapolis; best of references. Address Box 117, care *The Metal Worker,* 1205 Fisher Building, Chicago, Ill. July 6

PLUMBER and TINSMITH would like a steady position; city or country. Chas. Doellner, Hicksville, L. I. July 6

By a first-class all around TIN and SHEET IRON WORKER; 14 years' experience in all branches, graduate of New York Trade School; estimate from plans; practical in drafting; long experience; honest and sober, steady habits; married man, age 36; steady work, city or country; wages moderate. D. E. Phillips, Freehold, N. J. July 6

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By a first-class PLUMBER; in city or country. Thomas McSpidon, 328 East Sixtieth street, New York. July 6

By a first-class TIN and SHEET IRON WORKER; 20 years' experience; steady work; German. "Tinner," care of "Bissinger," 430 West Fortieth street, New York. July 6

Young man would like to correspond with firm needing sober and industrious mechanic; 13 years' experience in working sheet metal in ship and house ventilating line, and good hand at drafting; would like positon as layer out or foreman; willing to come on trial; best of reference. "K. K.," care *The Metal Worker,* 117-119 South Fourth street, Philadelphia, Pa. July 6

By a young man (27) acquainted with New York City trade, selling sheet metals. "E. C.," care *The Metal Worker,* New York. July 6

By a first-class experienced PLUMBER. Box 1466, Lee, Mass. July 6

By a first-class PLUMBER; temperate and reliable man; understands low pressure steam and hot water heating; would like positon at fair wages with reliable firm that would take boy 17 years old as apprentice; New England States preferred. "Plumber," care *The Metal Worker,* New York. July 6

FOREMAN for enameling concern; especially experienced in enameling cast iron with good, practical receipts for dry and wet enamels; best references. "Enameler 76," care *The Metal Worker,* New York. July 6

An all around TINNER; used to inside and outside work; can do piping, furnace work and general jobbing, and has some knowledge of plumbing; moderate wages for a permanent job. Chas. Shields, General Delivery, Cleveland, Ohio. July 6

As SHEET IRON WORKER HELPER by a young man 18 years old; has one year's experience; strong, sober and not afraid of work. Address to Box 114, Hicksville, L. I. July 6

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To correspond wih any one wanting a FOREMAN or MANAGER of a plumbing or heating business, or FOREMAN for water works construction; only those meaning business need answer. "Foreman," P. O. Box, Lock 407, Bay Shore, L. I., N. Y. July 6

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First-class PLUMBER seeks job in city or country; will be at liberty after July 4; used to first-class country work; understands plans and laying out work; good steam and hot water fitter; strictly sober; references. G. H. Graham, plumber, Sound Beach, Conn. June 29

Experienced STOVE SALESMAN open for inducement on and after July 10; good reference. "Billy," care *The Metal Worker,* New York. June 29

PLUMBER and GAS FITTER; young man, five years' experience, sober and reliable, would like to locate in Central or East Central State; some knowledge of roofing and conductor work; single; can go any place. H. J. Iverson, General Delivery, Wilmington, Del. June 29

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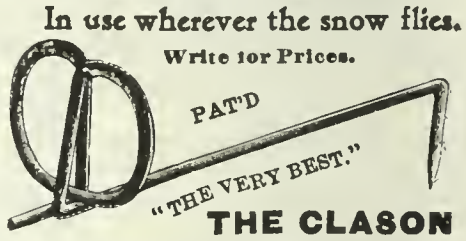

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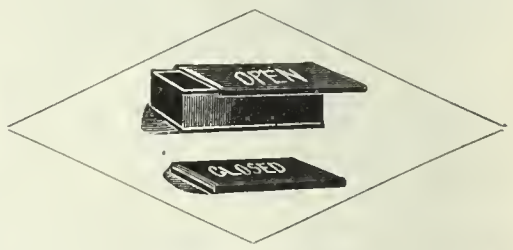

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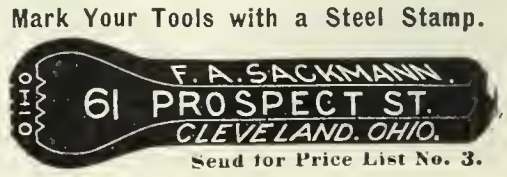

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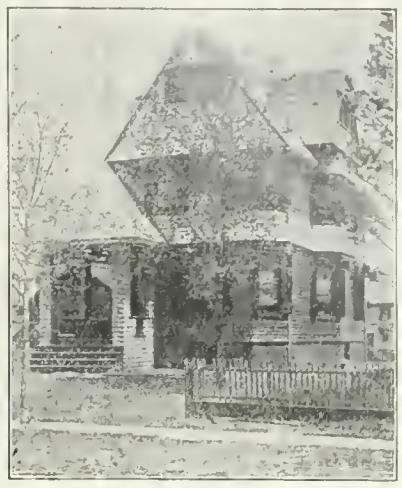

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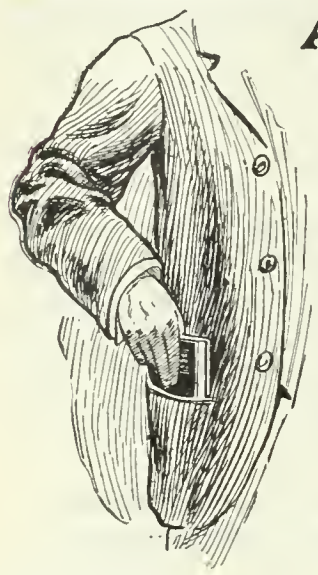

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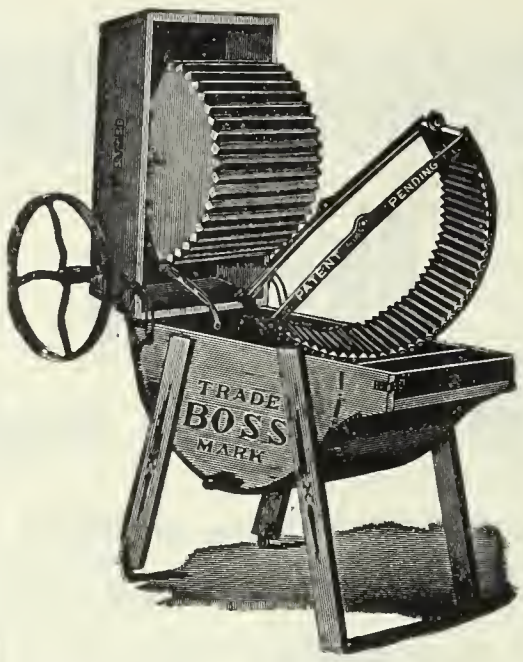

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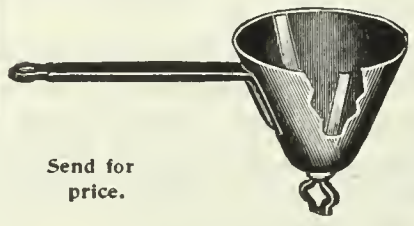

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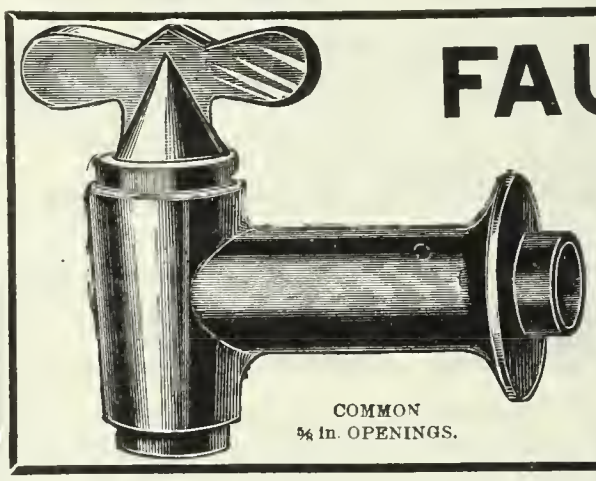

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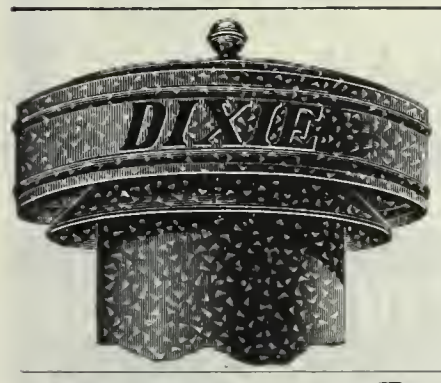

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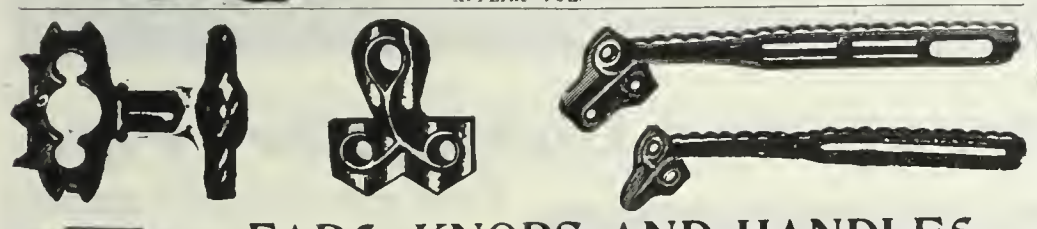

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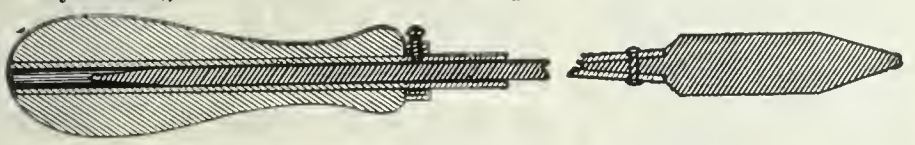

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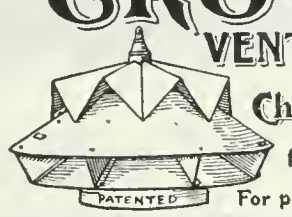

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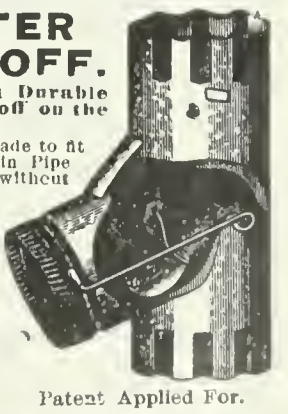

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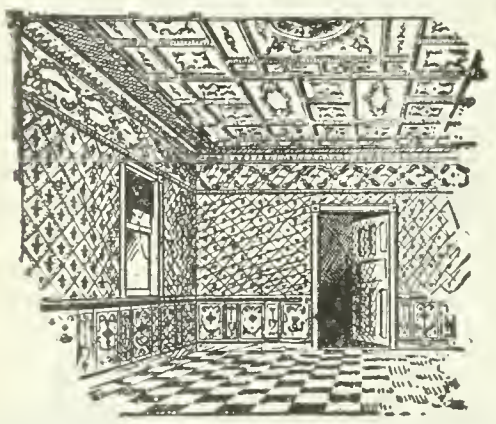

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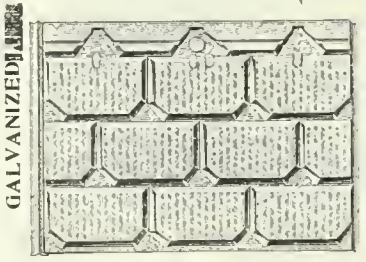

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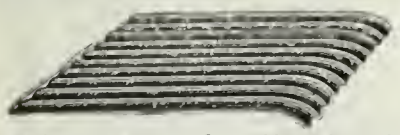

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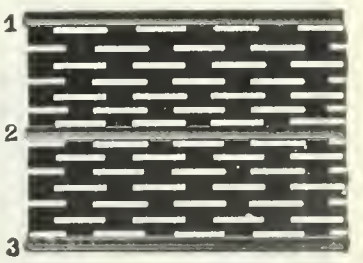

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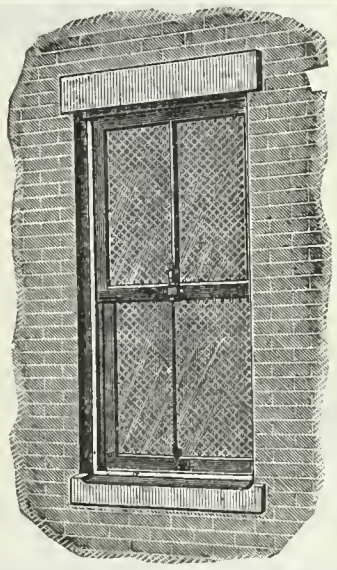

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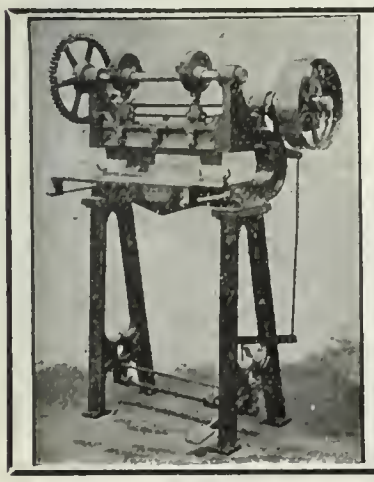

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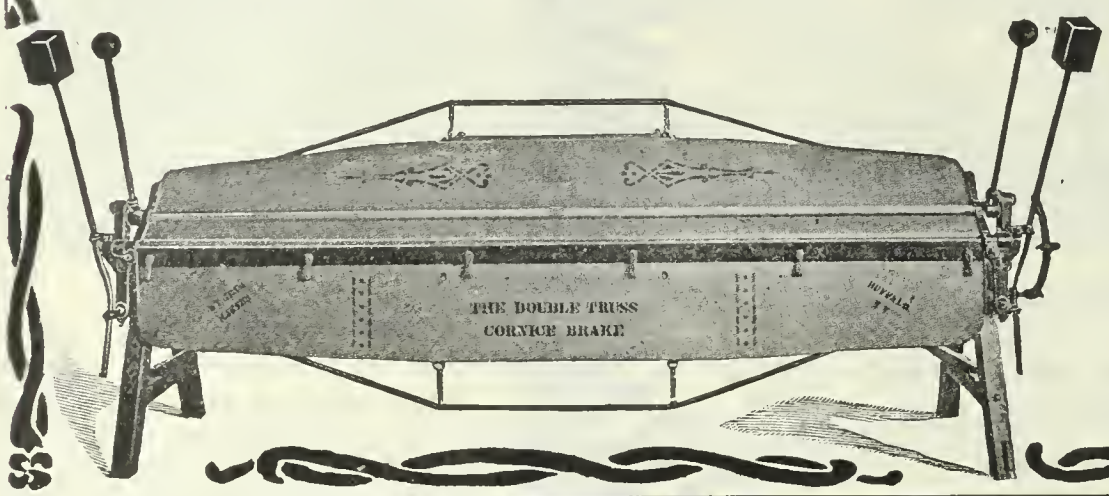

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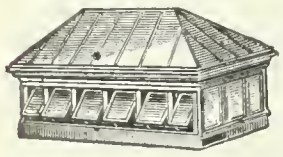

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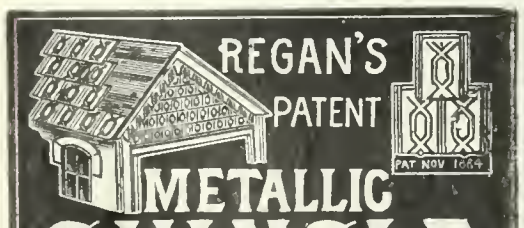

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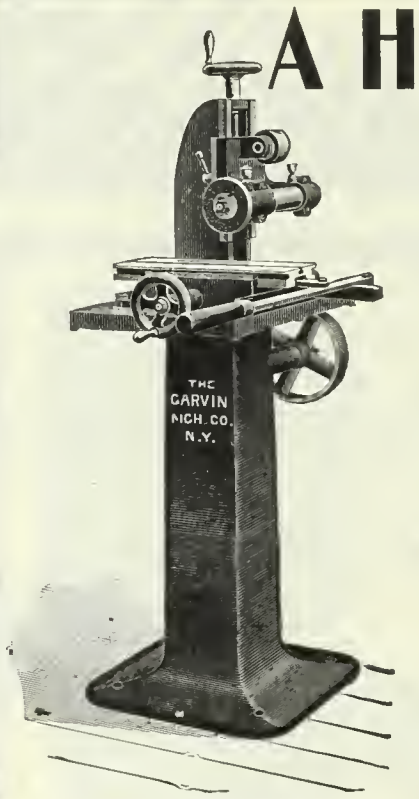

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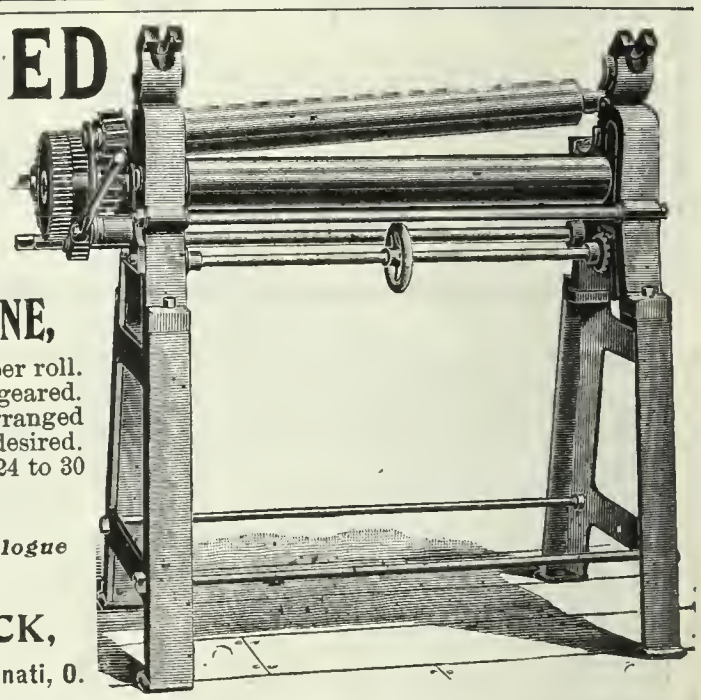

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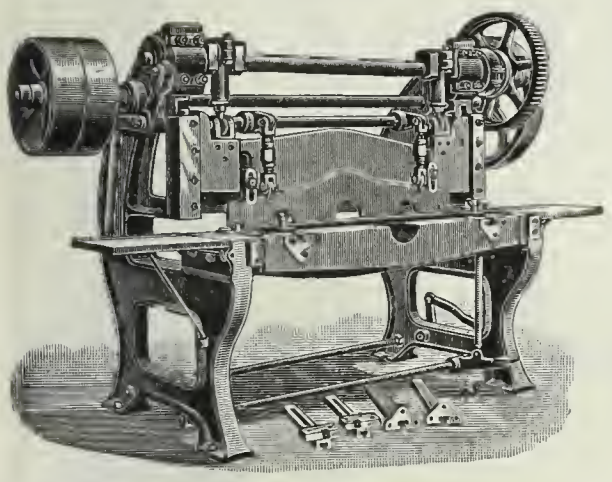

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96 inches long.

CORNICE MAKERS' SQUARING SHEARS.
With Lever Arc, Automatic Gauge. Will cut No. 22 iron.
97 inches long.

HERCULES SHEARS

make the cutting of sheet metal of heavy gauges an easy task for the mechanic and a profitable operation for the employer. With them a man can cut No. 12 steel, with one hand on the lever, leaving the other hand free to guide the stock while cutting elbows, ties and circles, as small as 8 inch radius; this is done without burring or buckling either piece, thus avoiding hammering and straightening, which add to the cost of the product. They split sheets of any width or length up to No. 12 gauge, cut wire or bar-steel ⅛ inch thick, cut off and mitre angle iron ⅛ inch thick, and do it perfectly.

PRICE, - - $35.00.
Write for Discount.

MANUFACTURED BY . . .

CHAS. McSHERRY,

PITTSBURG, PA.

Designer and Builder of Labor Saving Metal Working Machinery and Tools.

20th Century Groover for Hand Power. We also make them for Belt Power.

20th CENTURY GROOVER, Handiest out.

Operated from one position. Automatic knock-out and *Quick Return.* Grooves 22 gauge.
Write for circular. Made by
W. A. WHEELER, Indianapolis, Ind.

COPPER Lightning Rods ...

Absolute Protection from Lightning is given by use of our continuous copper conductors

E. G. WASHBURNE & CO.,
46 Cortlandt St. New York.

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Work put up or material furnished.

1st, 2d, 3d, 4th
Operations.

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Special Machinery and Tools.

SHEET METAL STAMPING.

LATEST EQUIPMENT. PROMPT SHIPMENT.

No. 1 Work. Fair Prices.

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MAIN OFFICE: 16 ADAMS ST., BROOKLYN, N. Y.

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Designers and Builders of Presses, Dies, Shears, Slitters, Double Seamers, Crimpers, etc., etc., for working all kinds of Sheet Metals.

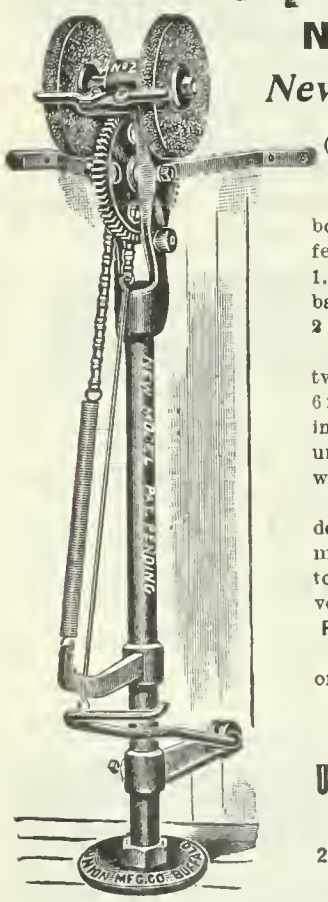
A few of the many articles for which we make the complete machinery for producing are shown in the accompanying cuts.

ALSO OWNERS OF **THE STILES & PARKER PRESS CO.**

UNION TOOL GRINDER NO. 2.

New Model.

(PAT. PEND. 1900.)



This machine embodies all the good features of our No. 1. All gear driven, ball ratchet, speed 2 to 4 thousand.

Furnished with two emery wheels, 6 x ¾ steel shaft, 1 in. tubing for column. Shipping weight 35 lbs.

Plumbers, stove dealers and repair men will find this tool a very good investment.

PRICE $8.00, NET.

Ask your dealer or write direct.

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GEO. A. OHL & CO.,

157, 159, 161 Oraton St., NEWARK, N. J.

(TELEPHONE 873.)

Manufacturers of all kinds of

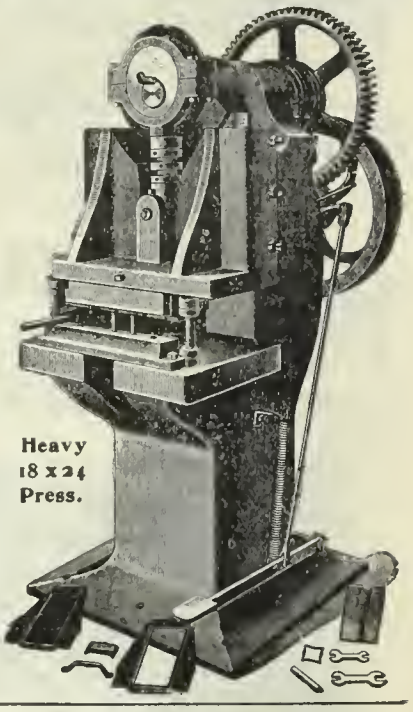
Metal Workers' Machines,

BRAKES

(ALL SIZES),

Heavy and Light Squaring Shears.

Punches, Presses, Sheet Steel Lath Machines, Drop Presses, Draw Benches, and SPECIAL MACHINERY of all descriptions.



Heavy 18 x 24 Press.

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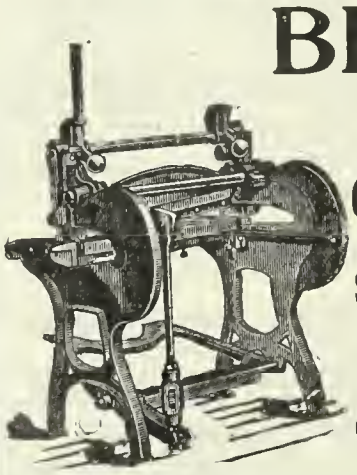
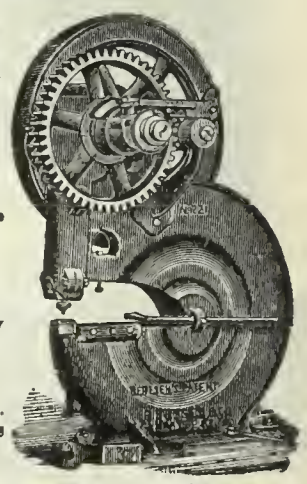
SHEET METAL WORKING MACHINERY

of every description.

Send for illustrated descriptive circulars and prices.





Agents: MERCHANT & CO., Philadelphia, Pa.

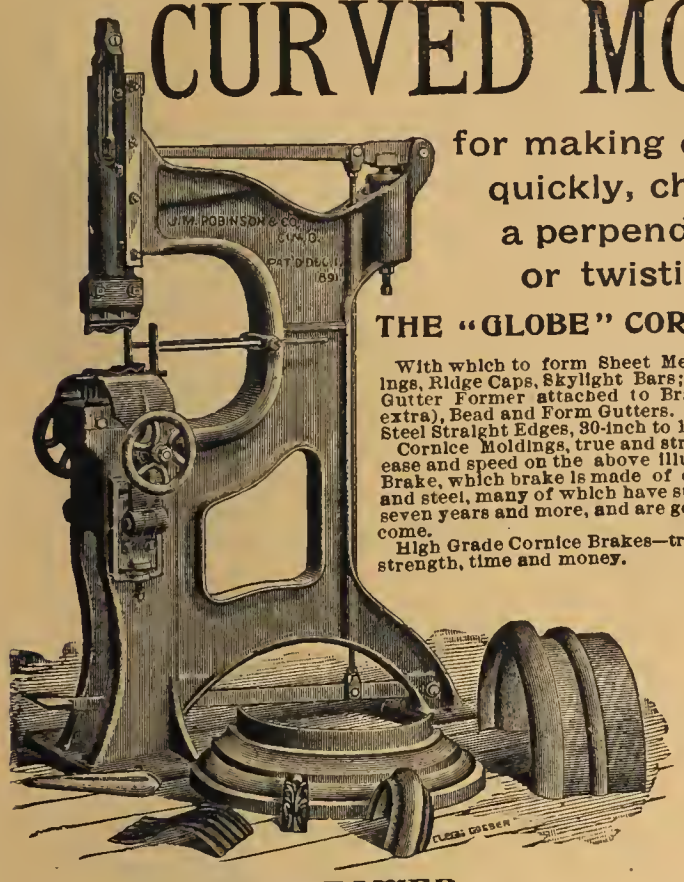
— An aged lady, getting into a cab in Dublin, said to the driver, "Help me in, my good man, for I am very old."

"Begorra, ma'am," he replied, "no matter what age you are, you don't look it."—*Exchange.*

— A fish seldom gets into trouble if it keeps its mouth shut—and the same might be said of a man.—*Exchange.*

CURVED MOLDING MACHINES

for making every style of sheet metal curved moldings quickly, cheaply and accurately. The hammer gives a perpendicular blow, entirely preventing the drawing or twisting of the material while being formed.



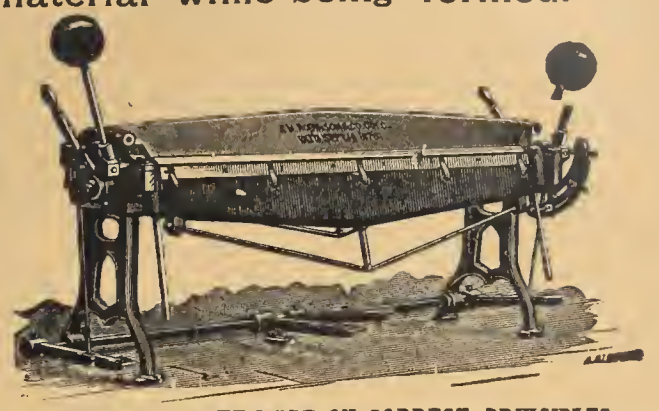
FOOT POWER.

THE "GLOBE" CORNICE BRAKE.

With which to form Sheet Metal into Cornice Moldings, Ridge Caps, Skylight Bars; and with Beader and Gutter Former attached to Brake (price of which is extra), Bead and Form Gutters. Cornice manufacturers' Steel Straight Edges, 30-inch to 10-foot lengths.

Cornice Moldings, true and straight, are formed with ease and speed on the above illustrated 8-foot Cornice Brake, which brake is made of cast and wrought iron and steel, many of which have stood the test of twenty-seven years and more, and are good for several years to come.

High Grade Cornice Brakes—try them and save your strength, time and money.



THE ONLY BRAKE MADE ON CORRECT PRINCIPLES.

The James M. Robinson Mfg. Co.,

CINCINNATI, O.

Designers and Constructors of Sheet Metal Working Machinery.

STOVE AND RANGE MAKERS'

Machinery for the Production of Iron Roofing a specialty.

Flanging Machine.

Geo. C. Keene & Co.,

CINCINNATI, OHIO.

Makers of the Keene Cornice Brake.

IMPROVED
Patent Automatic Can Body Double Lock Seaming Machines.

COMBINATION
Presses and Dies, Sheet Metal Tools, &c.

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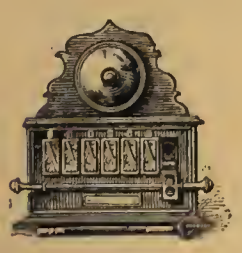

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Manufacturers of

Speaking Tubes, Whistles, Elbows, Oral Annunciators, Bell and Electric Wire Tubing.

Complete outfits of Speaking Tubes, Whistles, Pneumatic Bells, &c. A full line of Speaking Tube Hardware constantly on hand. Factory, DeKalb Ave., near Knickerbocker, Brooklyn, L. I.

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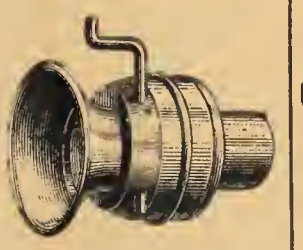
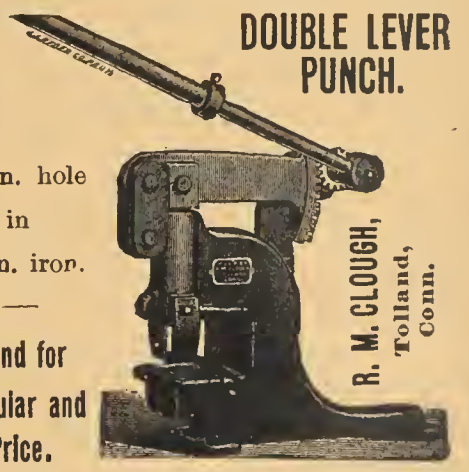


DOUBLE LEVER PUNCH.



½ in. hole in ¼ in. iron.

Send for Circular and Price.

PHILADELPHIA MACHINE TOOL CO.,

445-449 North Darien St., Phila.

PRESSES & SHEARS

CORNICE MACHINERY, ETC.

U. T. HUNGERFORD BRASS and COPPER CO.

Office and Salesrooms, 121 Worth St., bet. Centre and Elm Sts., } NEW YORK.
Warehouse and Shipping Dept. (Annex), 57 and 59 Elm St.,

SEAMLESS BRASS AND COPPER TUBING.

All sizes from 1-8 in. to 9 in. diameter.

SHEET COPPER, COPPER BOLT, COPPER NAILS, TOBIN BRONZE SHEETS, CIRCLES, PLATES AND RODS.

We carry in stock a general line of Brass and Copper in Sheets, Rolls, Rods, Wire, Rivets, Nails, &c.

Our large and well-assorted stock (aggregating over 1,000,000 lbs.) enables us to fill orders promptly.

★ SAWS ★

Our Star Hack Saws are now used in nearly all Iron-working Shops the world over. They are equally useful for farmers and men in all departments of life. They will cut iron and wood equally well A nail does not dull them at all. One blade, which costs five cents, will cut off an inch square bar of iron 200 times without sharpening. We have cut off such a bar 387 times with one blade. All hardware dealers will furnish these saws. If not, we will send one steel frame and six blades by mail, prepaid, on receipt of $1.00.

All good blades are stamped with a ★

MILLERS FALLS CO., 28 Warren St., N. Y

A Right Hand Range

is often required when the position of the boiler makes it inconvenient to use the ordinary left hand range. Our Novel Bay State and Acme Bay State Ranges are made with right or left hand fire boxes, either in portable form or for brick setting. Send for special circulars and prices.

Barstow Stove Company,

New York. Providence. Boston.

Lighted by Frink Reflectors.

RHODE ISLAND School of Design.

I. P. FRINK, 551 Pearl St., New York

L. & R. WISTER & CO.,

Bullitt Building, Philadelphia.

Dunbar Foundry Pig Iron.
Dunbar Connellsville Coke for Foundry Use.
American Sheet Iron Co.'s Sheet Iron.
American R. G., cleaned of uniform black color.
Dealers in all kinds of Iron and Steel Scrap.

BRUCE & COOK.

TINNERS' TOOLS and MACHINES.

TINNERS' SUPPLIES.

186, 188 & 190 Water Street, and 248 & 250 Pearl Street, NEW YORK.

UTICA PIPE FOUNDRY CO.

CAST IRON PIPE and SPECIALS for WATER and GAS. Also Flanged Pipe and Fittings, Hydrants, Gates, Pig Lead, etc. CHAS. MILLAR & SON CO., Selling Agents, Utica, N. Y. Manufacturers of Lead Pipe and Plumbers' Materials. Wholesale Eastern Agents Akron Vitrified Sewer Pipe.

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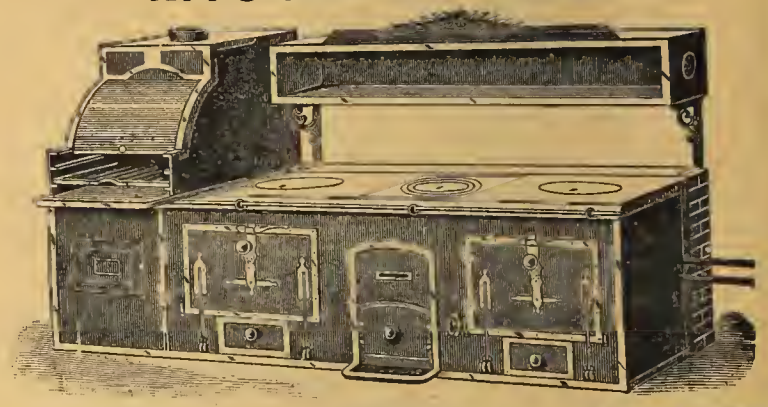
KITCHEN OUTFITS.



French Ranges, Broilers, Carving Tables
Stock Kettles, Tea and Coffee Sets,

And every requisite for the complete furnishing of any size Hotel or Restaurant Kitchen.

SMITH & ANTHONY COMPANY,

SEND FOR OUR 120 PAGE CATALOGUE. BOSTON

Old Names Are Not Always Old Quality But—

The quality of the "*TAYLOR OLD STYLE*" brand ***has never varied and will not be changed to*** meet the competition of Bessemer Steel Ternes.

N. & G. TAYLOR CO.,

Sole Manufacturers,

PHILADELPHIA.

Do You Know

that when it comes to a question of **meritable, taking, well advertised goods,** there is no line made that can compare with the celebrated

GLENWOOD

Ranges and Heaters.

Weir Stove Company, Foundry at Taunton, Mass. } W. S. Ray Mfg. Co., San Francisco, Cal. Jacob Retterer, Chicago, Ill.

INCREASING DEMAND TELLS THE STORY . . .

McCLURE'S GENUINE CHARCOAL IRON REDIPPED ROOFING TIN

McCLURE & CO.,

Manufacturers of Tin Plate,

PITTSBURGH, PA. 211, 213 and 215 Second Ave.

PHILADELPHIA, PA. 115 North 7th Street.

Index to Reading Matter, Page 60.

Index to Advertisements, Pages 62 - 64.

The Metal Worker

A WEEKLY JOURNAL OF THE ROOFING, CORNICE, STOVE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

VOL. LVI. NUMBER 2. | NEW YORK AND CHICAGO, JULY 13. 1901. | ONE DOLLAR A YEAR. SINGLE COPIES 5 CENTS.

Iron Stone Stove Lining.

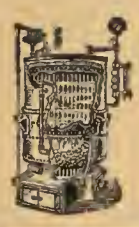
Fits any Stove.

Plastered in like mortar. Gets as hard as brick.

MY FACE ON EVERY BAG.

PRICES—$1.60 per doz. 10 lb bags in 2 doz lots. $1.00 per doz. 6 lb. bags in 3 doz. lots. ONE CENT per lb. in bulk in Barrel.

Address **WILLIAM M. NEWTON, Albany, N. Y.**



The Gorton Side Feed Boilers

FOR STEAM AND HOT WATER HEATING.

INVESTIGATE FOR YOURSELF.

Send for Catalogue and Prices.

GORTON & LIDGERWOOD CO.,

96 Liberty St., NEW YORK. Old Colony Bldg., CHICAGO
77 Oliver St., BOSTON. Prudential Bldg., ATLANTA, GA.

STOVE LININGS

McLEOD & HENRY CO.,

TROY, N. Y.

Diamond Thimbles.

S. CHENEY & SON,

Manlius, N. Y.

Many people, in an effort to save money, really waste it. This is especially true when applied to the purchase of a heating apparatus. If the Paragon Furnace costs a little more than the common hot air furnace, it is because it is worth more. And don't forget that you pay the slight difference but once, while the furnace retains its superiority during its whole life.

ISAAC A. SHEPPARD & CO.

NEW YORK PHILADELPHIA BALTIMORE

Apollo galvanized iron may not be so easy to get—your jobber don't keep it. Change your jobber.

American Sheet Steel Company
Battery Park Building
New York

WHAT we said about that turkey being roasted in a Grimm Steel Range is true, every word of it. Will you order a sample and be convinced? The Grimm Steel Range is better than the ordinary run of steel ranges. If not, return at our expense.

G. H. GRIMM & CO.,
RUTLAND, VT.

Sold to dealers only. Ask for catalogue.

FOLLANSBEE BROTHERS CO.,
328-330-332 Second Ave.,
Apollo B. B. Galvanized Sheets.

Sheet Copper shipments made promptly from mill, or Pittsburgh stock at the lowest market prices.

Philadelphia Branch,
133 Arch Street,
S. V. Reeves, Manager.

THE DIGHTON FURNACE Page 22.

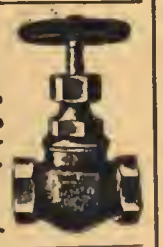
CROSBY SPRING-SEAT

GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.

Crosby Steam Gage & Valve Co.,

BOSTON: 95 Oliver St. NEW YORK: 78 John St. CHICAGO: 21 23 W. Lake St.



Steam Specialties.

RELIEF and ELEVATOR VALVES, NOISELESS BACK PRESSURE VALVES, STEAM TRAPS, PUMP GOVERNORS, STEAM AND WATER REDUCING VALVES, STEAM and OIL SEPARATORS. TANK TEMPERATURE CONTROLLER and No. 1 DAMPER REGULATORS.

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9-17 W. 13th St., - NEW YORK.

JENKINS IMPROVED AUTOMATIC AIR VALVES.

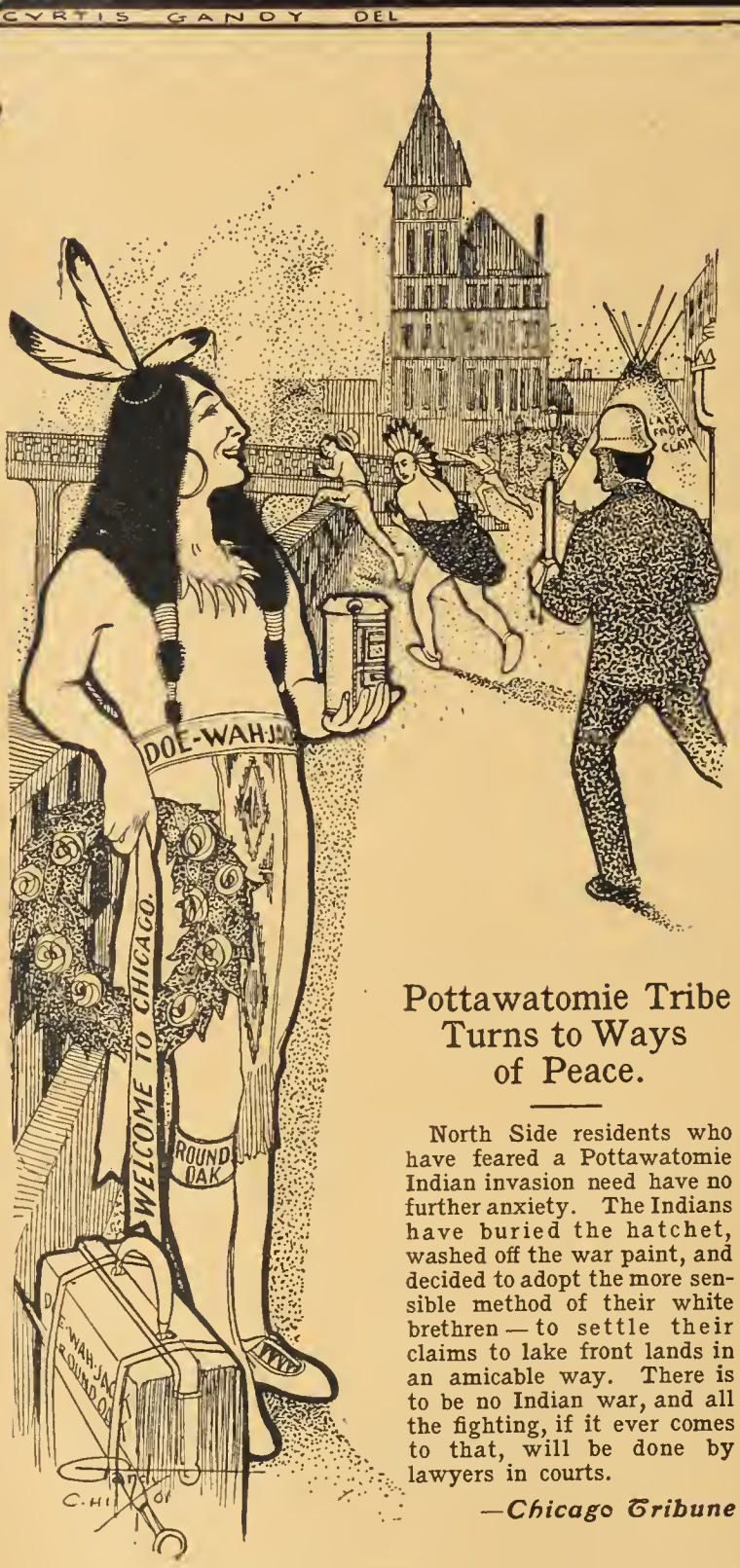
Suitable for high or low pressure. Take no more room than an ordinary air cock. Endorsed by the leading steam experts as the best made and the quickest working. All genuine stamped with our Trade Mark.

JENKINS BROS., New York, Boston, Chicago, Philadelphia.

READ OUR "AD" Page 10.

MAGEE FURNACE CO.,
Boston.

ROUND OAK
STANDARD OF AMERICA



Pottawatomie Tribe Turns to Ways of Peace.

North Side residents who have feared a Pottawatomie Indian invasion need have no further anxiety. The Indians have buried the hatchet, washed off the war paint, and decided to adopt the more sensible method of their white brethren — to settle their claims to lake front lands in an amicable way. There is to be no Indian war, and all the fighting, if it ever comes to that, will be done by lawyers in courts.

—Chicago Tribune

It won't harm you

to know all about the *Round Oak* furnace. Perhaps you cannot sell it at first. Price may be the only thing your customers look at. They may have been educated that way. Still, we have had that state of affairs confront us before, and we have won out. Quality will do it.

Estate of P. D. Beckwith, Dowagiac, Mich.

MAKERS OF GOOD GOODS ONLY.

28

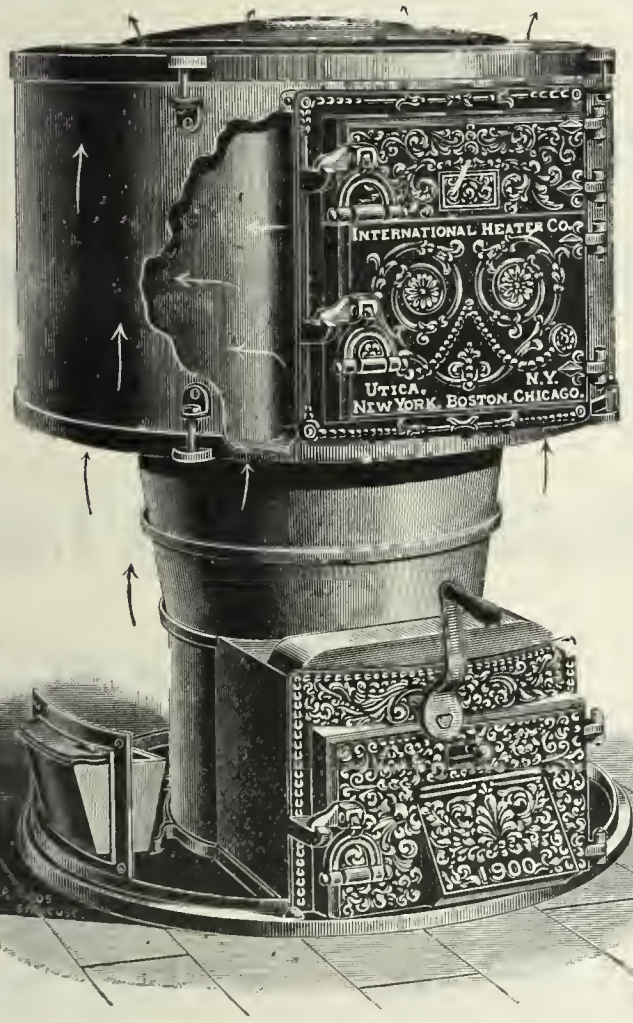
IT PAYS TO HANDLE GOOD GOODS. . . . .
CHANCE CUSTOMERS BECOME PERMANENT;
EVERY SALE PROVES AN ADVERTISEMENT.

The Palace Regent

IMPROVED

WARM AIR FURNACE

With Natural Gas Ring if desired.



Large Double Feed Doors.

Generous Combustion Spaces.

Large Area of Radiating Surface.

Automatic Gas Damper.

A THOROUGHLY GOOD HEATER AT A MODERATE PRICE.

International Heater Co.,

UTICA, N. Y.

BOSTON. NEW YORK. CHICAGO. DENVER.

Largest Makers of Heaters in the World.

Nothing t

"Garland"

For the Sea

New Models of Steel Ranges.

New Models of Steel Cooking Stoves.

New Models of Base Burners.

New Models of Sheet Iron Hea

New Models of Sheet

More New and Desirable Patterns

Our New Catalogue now in the hands

First Prize Paris 1900.

The Michigan S

Largest Makers of Stove

DETROIT. CHI

oo Good for

Agencies!

ason of 1901.

New Models of Cast Ranges.

New Models of Cast Cooking Stoves.

New Models of Oak Stoves.

ters for Coal (Hot Blasts).

ron Heaters for Wood (Air Tights).

than have ever before been offered.

of the printers and will soon be issued.

tove Company,

and Ranges in the World,

AGO. BUFFALO.

First Prize Paris 1900.

It is a warm subject to force upon your attention at this time of year, but upon the heating of the houses now under way depends the satisfaction of your customers. Your customers will not blame you for hot houses in Summer, but they **WILL** blame you for cold houses in winter. We have manufactured heating and cooking apparatus for many years, and we expect to do so for many years to come, as we believe the policy of careful attention to details and the production of the best goods will continue to be appreciated. Boynton Furnace Company's Heaters (Warm Air, Hot Water and Steam), Ranges, etc., are made right and sold right. Our customers know this. It is those who do not that we address. If in the market for a complete line, write us. The Boynton Furnace Co., 207 and 209 WATER ST., NEW YORK.

1902 "RELIABLE" STEEL RANGES

Are Perfect in Every Detail.

We have added many valuable improvements for the coming season.

Place no orders until you see our line.

Write for Catalogue.

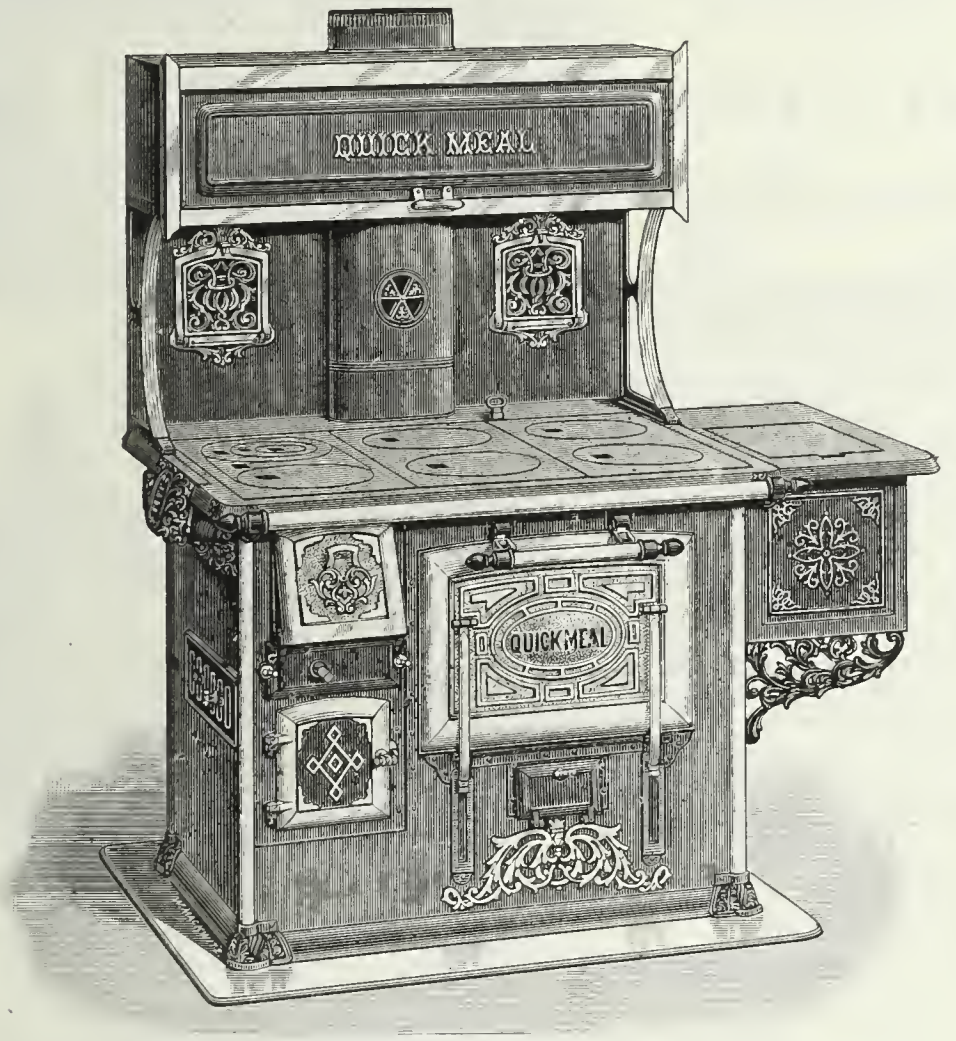
Made by

THE SCHNEIDER & TRENKAMP CO.,

Cleveland. Chicago.

QUICK MEAL

Enameled Steel Range



With its **New Right-Hand Reservoir** and **Pouch Feed** will place the Dealer where he can secure the trade of all customers looking for the **best, most practical** and **most durable Range.**

These **valuable new features,** together with those used in the past, will build up his trade and give him a line of Ranges with so many **good features** of their own that it will place him in a position to **lead all classes of competition.**

"Quick Meal" Steel Ranges are a Specialty.

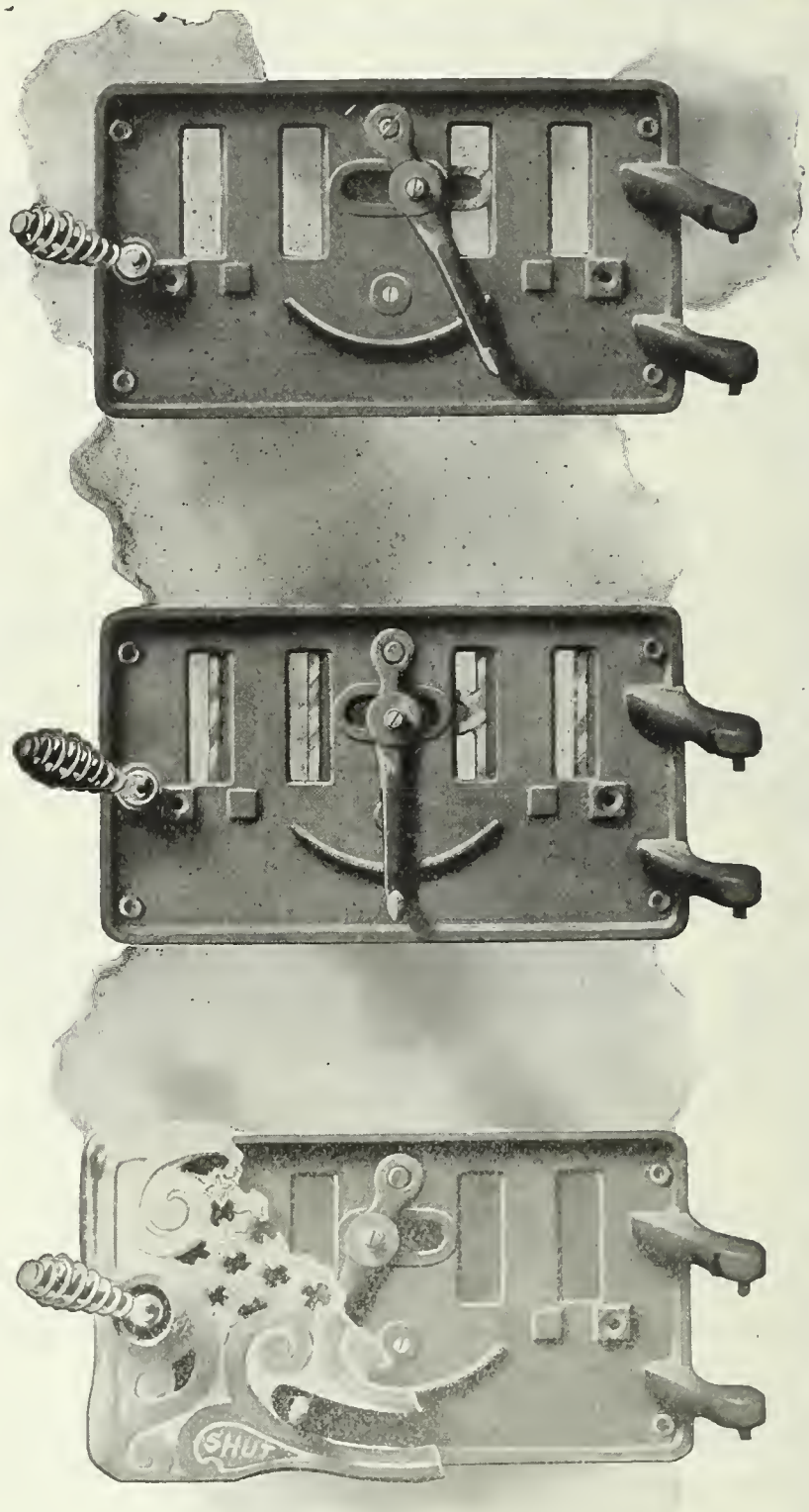
They Speak for Themselves.

RINGEN STOVE Co. SAINT LOUIS

Moore's Air-Tight Heater

M TRADE MARK

The Air-Tightness of an Air-Tight Stove Consists in Its Being Air-Tight



The above simple fact is frequently lost sight of in the meaningless use of the word air-tight, loosely applied to many stoves regardless of the fit-ness of their joints. Much of the secret of the success of MOORE'S AIR-TIGHT HEATER lies in the perfection of the base door, all the joints being mechanically ground to within $\frac{1}{1000}$ of an inch of actual contact.

JOLIET STOVE WORKS

JOLIET, ILLINOIS

28

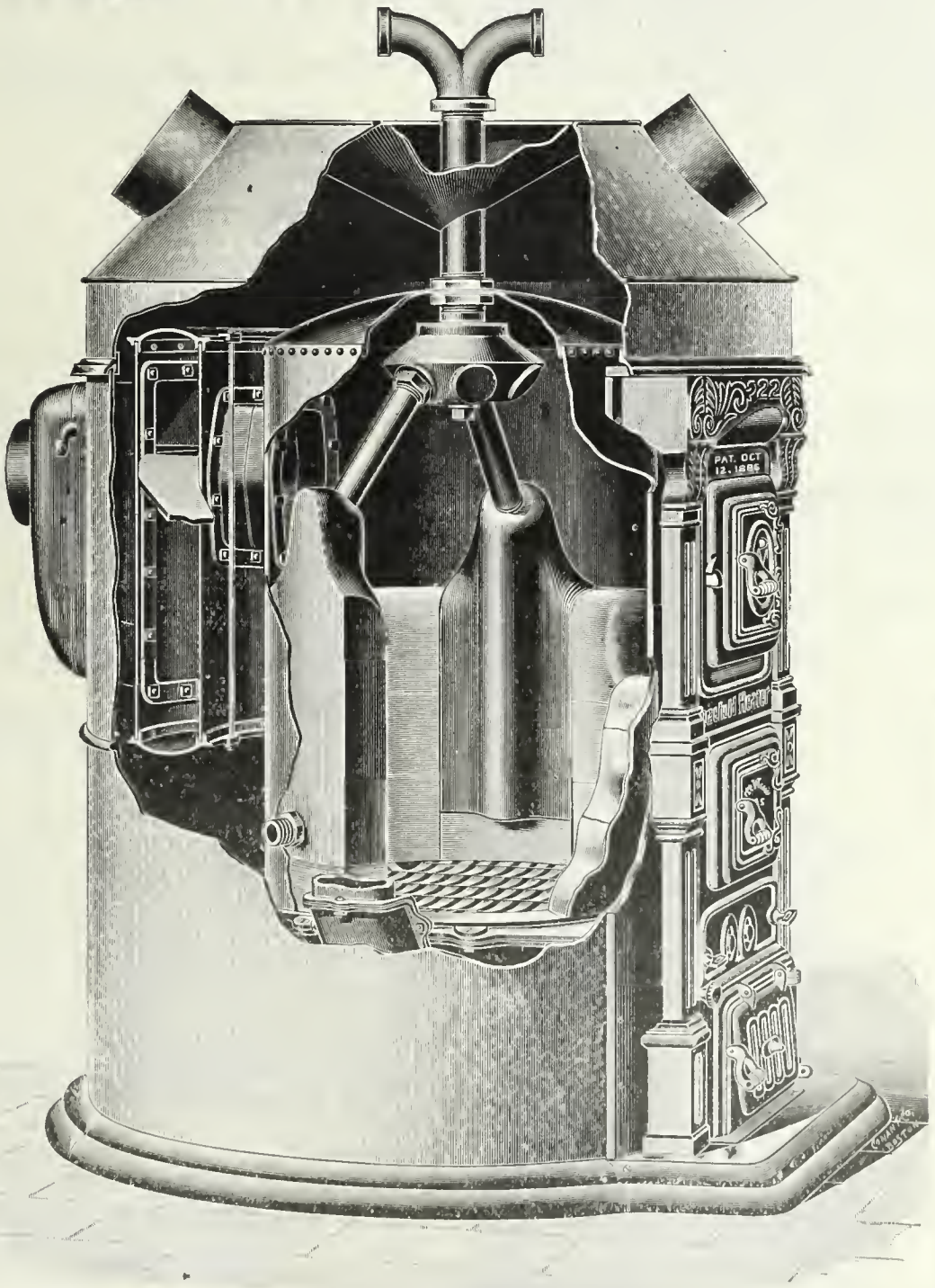
See that Horseshoe

"Healthy Heat and Plenty .....of It."

RADIATOR

The Auxiliary Horseshoe Radiator adds greatly to the heating power of

THE HOUSEHOLD FURNACE.



This radiator, having patent indirect Draft and Revertible flue, is connected to the main body of the furnace by a patent lock collar which is self packing and gas and dust tight.

With its large brick-lined fire pot and this radiator we guarantee the Household Furnace to comfortably heat the coldest house built.

THE WHITE-WARNER CO.,

TAUNTON, MASS., U. S. A.

Ranges

Portable or Brick Set,
Single or Double Oven,
Cast Iron, Steel, French.
All Sizes, Family, Hotel or Restaurant.

Magee

Heaters

Warm Air,
Combination,
Steam,
Hot Water.

Excelled by None in the World

With pardonable pride we refer to the following letter:

UNITED STATES COMMISSION
TO THE
PARIS EXPOSITION OF 1900

New York, May 31st, 1901.

A.N. Parlin, Esq.,
Treasurer Magee Furnace Co.,
Boston, Mass.

Dear Sir:

Replying to your inquiry we beg to state that your diploma will read that you were awarded a Gold Medal for your Exhibit in Class 74 at the Paris Exposition.

This award covers all the articles that you Exhibited, which are classified in Class 74, namely your Range, Furnace and Boiler.

Yours very truly,

Director of Varied Industries.

Supt. Dep't Heating & Ventilation

IMPORTANT.—Our line has a SELLING QUALITY in addition to STYLE and MECHANICAL excellence. Write us.

MAGEE FURNACE COMPANY,

32-38 UNION STREET, BOSTON.

The largest and most complete line under one name in the United States.

RICHMOND

RANGES

sell on sight
because their many
excellent features appeal
to every housewife.

It is up to the dealer to
get acquainted with
RICHMOND RANGES.

A Catalogue Sent
For the Asking.

THE RICHMOND STOVE CO., - Norwich, Conn.

Model Radiator

For Hard or Soft Coal.

Made in four sizes, Nos. 12, 14, 16 and 18.
Every stove a single or double heater complete, without the use of extra parts.
Large heating surface—Equal to that of an Oak.
Best and simplest reversible pipe collar.
Very substantial outer casing, which is easily removed.
Joints ground and cemented.
All doors fitted Air-Tight.
Our patented Air-Tight draft register in Ash Pit Door.
In this stove we use our new patented method of holding the sheets of mica. They will not get out of place or smoke up.
Handsome Nickel Ornamentation.
A postal card will bring you more information.

MODEL RADIATOR.

THE PORTSMOUTH STOVE & RANGE CO.,

THE BUSIEST MAKERS OF STOVES & RANGES IN THE WORLD

Portsmouth, O.

MORLEY BROS.,
Saginaw, Mich.,

Agents for Michigan and the Northwest

STOVE S

"What woman
lose one piece,
the house and s

WHAT man being
kinds of stove
for one Line that
quirements in his Stove Departmen

Each year hundreds of merchan
a Line; at Albany (IF THEY ARE EASTERN MERCHANTS) or at Au
only line of Stoves having bo
Western Foundries.

MORAL: *It is easier to get New Trad*
Acorns you gain new trade e

TORIES NUMBER THREE.

, having ten pieces of silver, if she doth not light a candle and sweep eek diligently till she find it?"

—From the Parable of The Lost Money.

a Stove Merchant and having many s to sell doth not seek Diligently will supply (THE ACORN LINE OFFERS GREATER VARIETY IN NEW PATTERNS THAN ANY OTHER TRADE-MARK LINE) all re- ?

s are finding such ·ora (IF THEY BE WESTERN MEN). The h Eastern and

OUR LABEL	RATHBONE, SARD & COMPANY "THE OLDEST AMERICAN STOVE-MAKERS" ALBANY DETROIT CHICAGO AURORA

(than to regain Lost Trade; by selling asily and have no Lost Trade to look after.

FOREST CINDERELLA

FOR WOOD,

Contains many special features.
Here are a few of them.

Heavy cast iron linings 16 inches high.
Pipe Collar interchangeable with top and end.
Sweat Damper to prevent creosote deposits.
Screw Draft register insures perfect control of the fire.

WRITE FOR FULL DESCRIPTION AND PRICES IF YOU ARE INTERESTED.

STOVES AND RANGES CINDERELLA NEVER FAIL

PITTSBURGH STOVE AND RANGE COMPANY.

PITTSBURGH, PA.

WESTERN SALES AGENT, W. D. Sager, 38 to 40 Michigan St., Chicago, Ill.

STOVES AND RANGES CINDERELLA NEVER FAIL

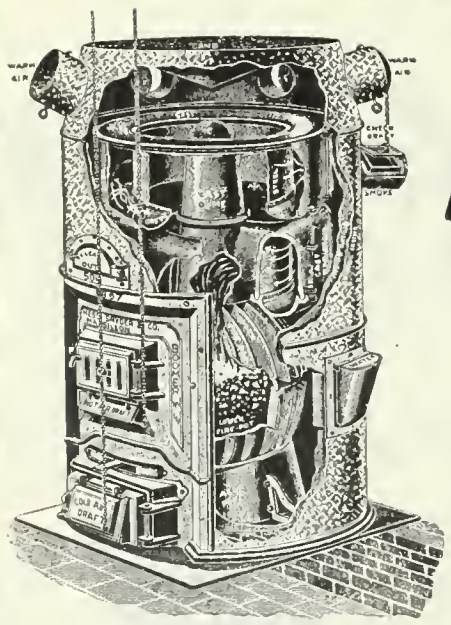
Border Copyrighted '99.

REGARDING

Boomer Furnaces.

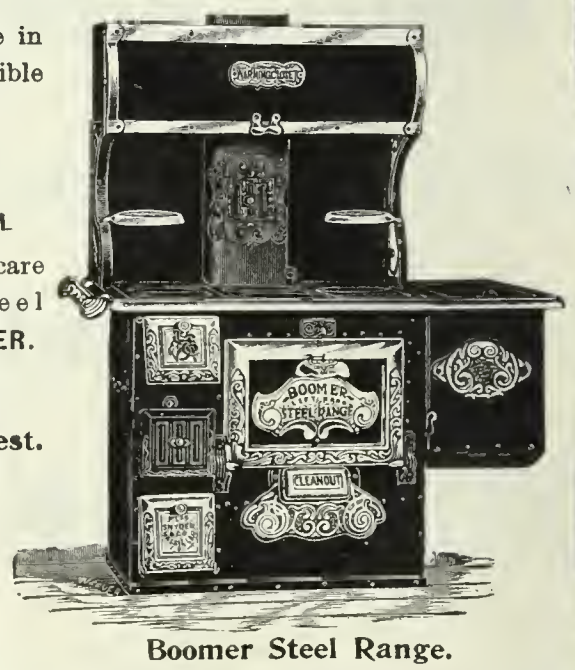
OR

Boomer Steel Ranges



Boomer Furnace.

We want to state in strongest terms possible that if you want the
HEAVIEST,
MOST DURABLE,
MOST ECONOMICAL
and easiest to take care of Furnace or Steel Range, buy a **BOOMER.**



Boomer Steel Range.

Neither time nor money is spared to make them the Best.
Buy Boomers and save your coal bills.
We invite investigation.

THE HESS-SNYDER CO.,

Manufacturers, MASSILLON, O.

CATALOGUES SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

Triumph Eclipse, New "D" Series.

THE BEST LINE OF LOW PRICED RANGES ON THE MARKET.

High Grade Materials, Skilled Workmanship, Correct Construction, Durability.

THEY STAY SOLD

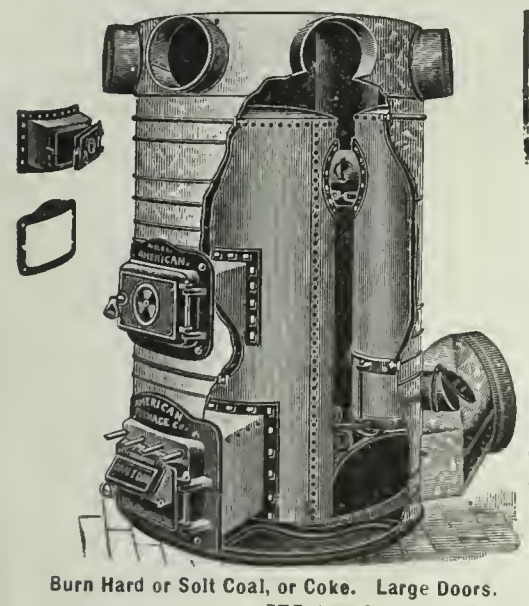
OVEN SIZES, 14 x 18, 16 x 18, 18 x 18, 20 x 18. No. 7, 8 or 9 Covers ON ANY SIZE.

We can make it to your interest to handle the Eclipse line. Write for Catalogue and discounts.

The Eclipse Stove Co.,

Mansfield, Ohio.

Repositories at St. Anthony Park, Minn.; Omaha, Neb.; Denver, Col.



Burn Hard or Soft Coal, or Coke. Large Doors.

Some Ripe Experience

Has come to us through watching the doings of dealers throughout the United States.

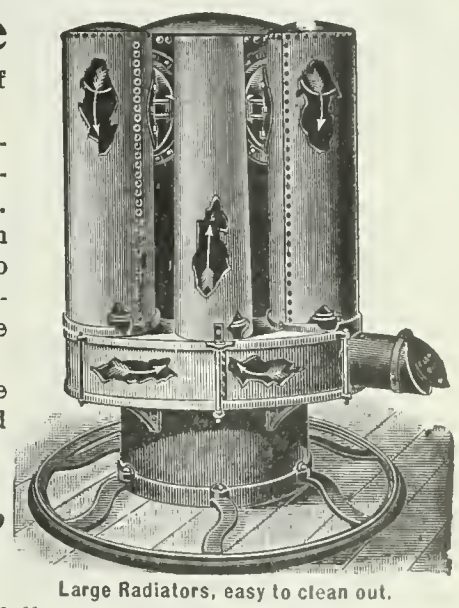
We find that the dealer who sells cheap furnaces not only loses ground in the furnace business but also has a falling off in his other lines.

On the other hand we can say that the man who sells a good furnace and charges enough to do a good job will, in a few years, be the leading furnace man in his town and at the same time build up his other business.

The ***American Furnace*** is made for the better class of trade; is durable, clean and economical in fuel.

The American Furnace Co.,

1911-13 PINE STREET, ST. LOUIS, MO.

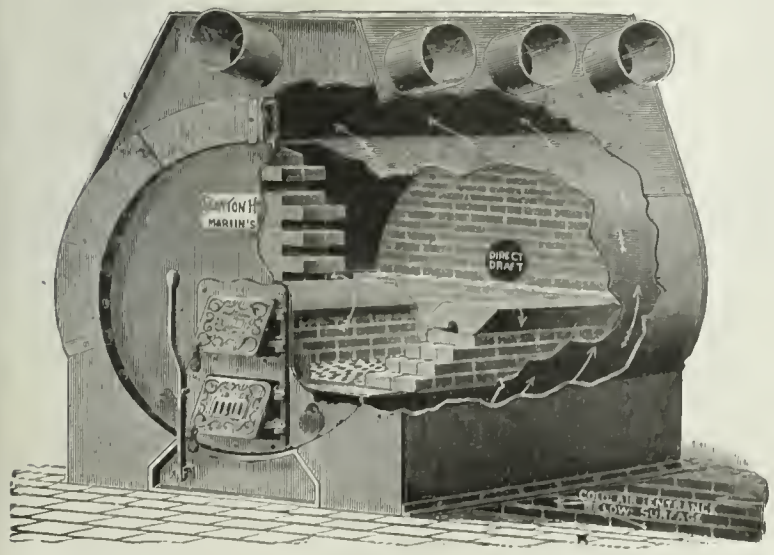


Large Radiators, easy to clean out.

Write for prices and secure the agency before the other fellow gets it.

The Stanton Seamless Heater,

PORTABLE CASED.



LOUISVILLE, KY., Apl. 5th, 1901.

THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

Gentlemen:—Your favor of the 3d inst. is received asking our experience with the Stanton Heater which you put in for us during the fall of 1899. In reply we will say that it gives us pleasure to express our entire satisfaction with this Furnace. While we have had no severe weather this winter there have been several quite cold snaps, but our offices have been very comfortably heated, and our coal bill (Pittsburgh coal) has been quite moderate compared with other Heaters we have used.

The satisfaction the Heater has given us can be best expressed by saying that we have not heard the Furnace mentioned once this winter. You can see, therefore, that we have had absolutely no cause for complaint.

Yours very truly,
ROBINSON-HUGHES & CO

SEND FOR CATALOGUE.

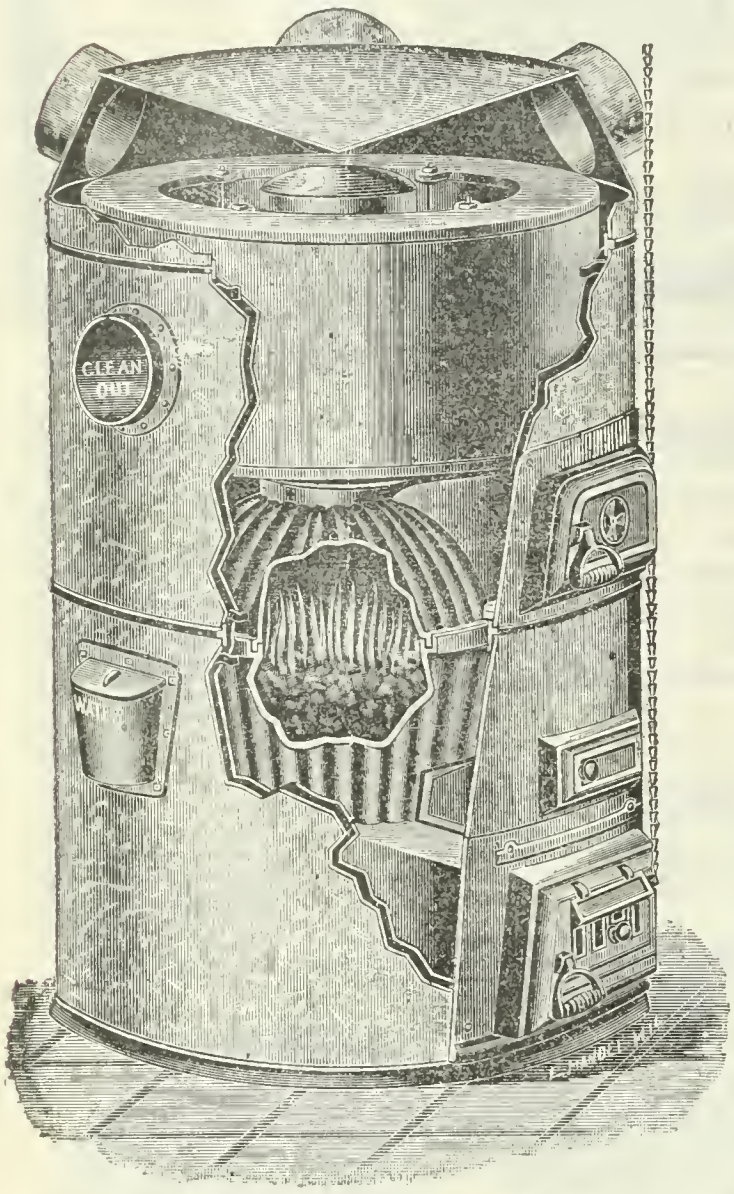
THE STANTON HEATER CO.,

Martin's Ferry, Ohio.

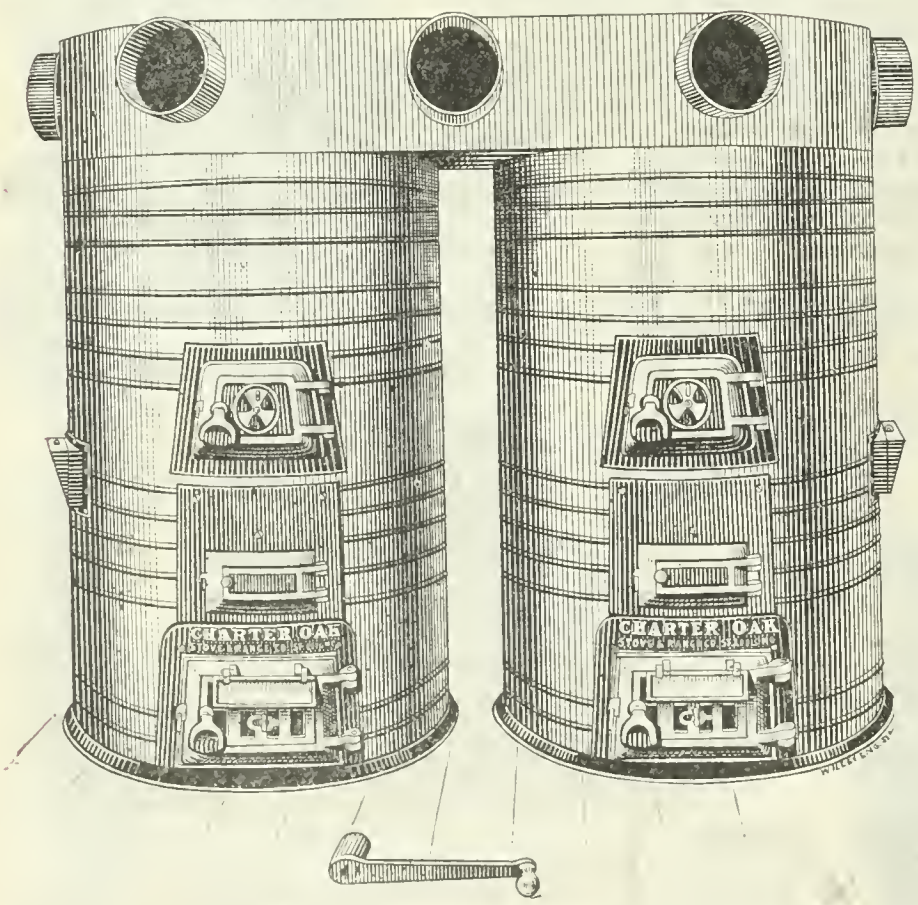
See our advertisement next week.

Charter Oak Furnace.

THEY ARE GOOD AND THE PRICE SELLS 'EM.



SELLS 'EM QUICK.



With Steel Radiator
and
With Cast Radiator.

THREE SIZES.

Please Write for our

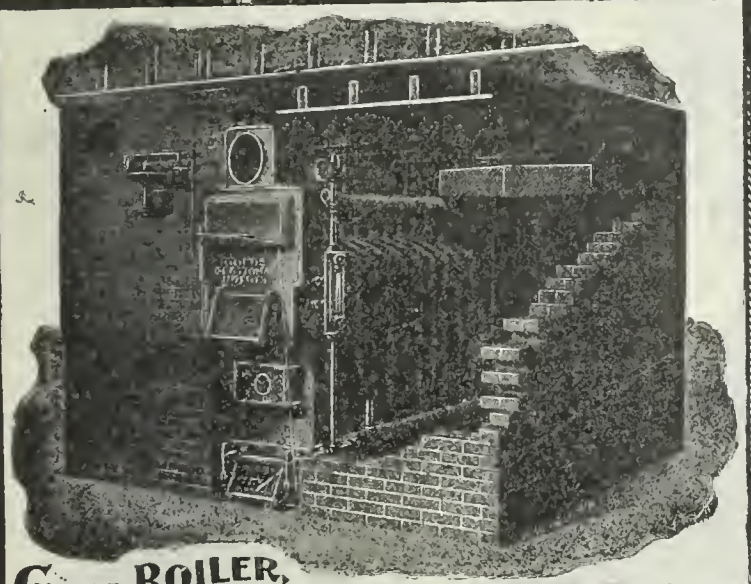
Special Price List "D."

Charter Oak Stove and Range Co.,

Main and Smith Streets, ST. LOUIS, MO.

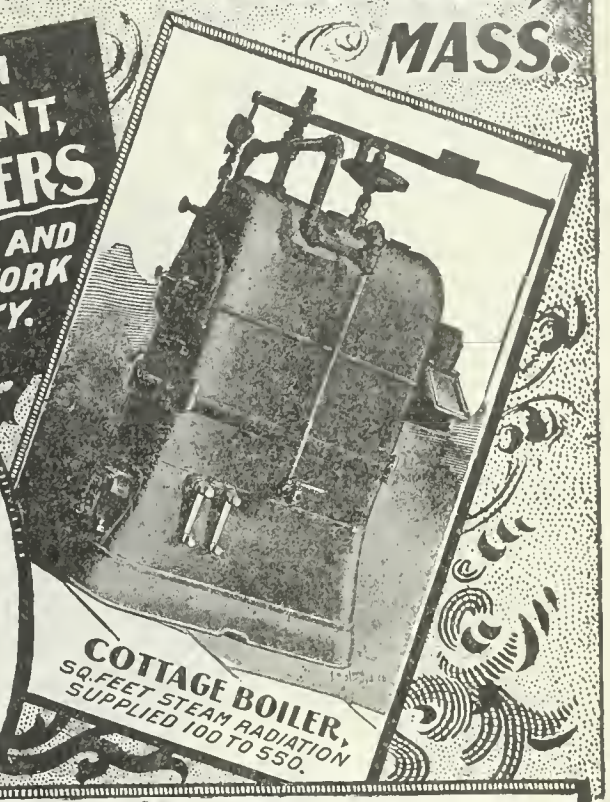
THE H.B. SMITH CO.

WESTFIELD, MASS.



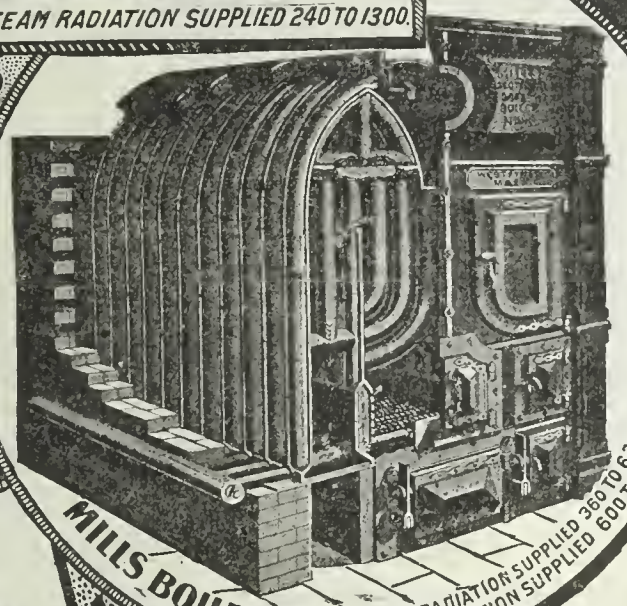
GOLD BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

EUROPEAN AGENT, AUG. EGGERS
BREMEN AND NEW YORK CITY.

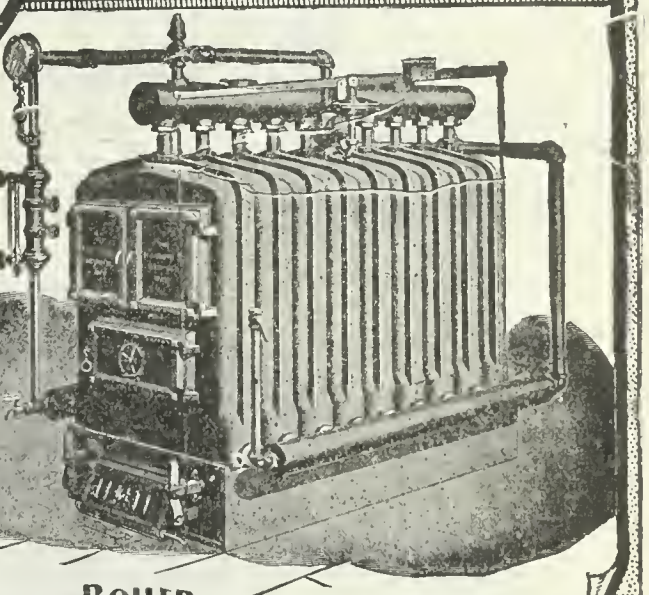


COTTAGE BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 100 TO 550.

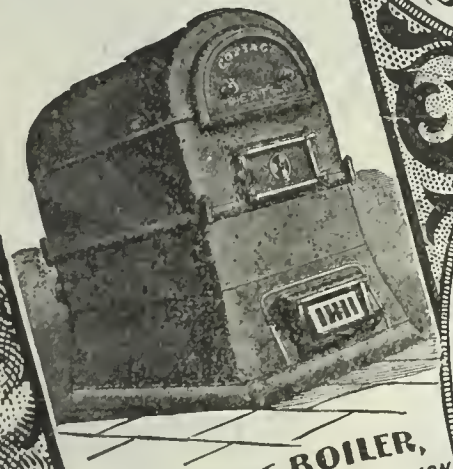
PACIFIC COAST AGENTS,
DUGAN BROS.
SAN FRANCISCO CAL.



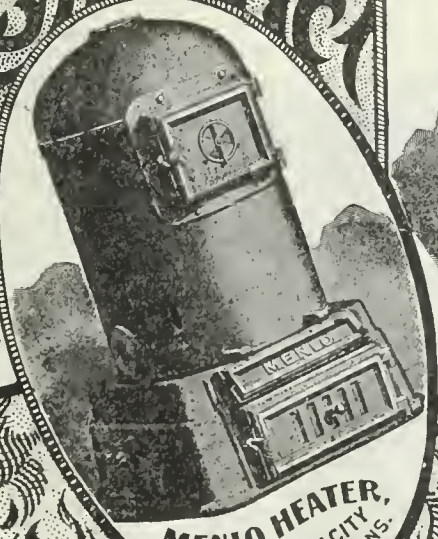
MILLS BOILER SQ. FEET STEAM RADIATION SUPPLIED 360 TO 6250.
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.



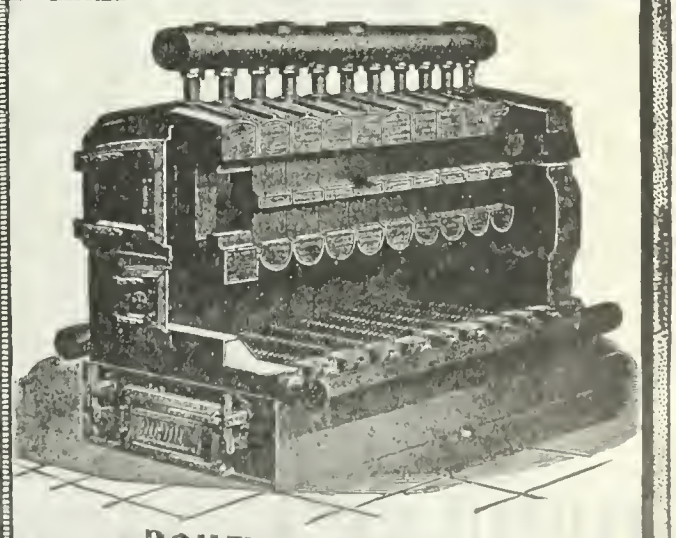
COTTAGE BOILER,
SQ. FEET WATER RADIATION SUPPLIED 150 TO 1000.



MENLO HEATER,
TANK CAPACITY 100 TO 180 GALLONS.

Western Agents
WESTERN BRASS M'F'G CO.
ST. LOUIS, MO.

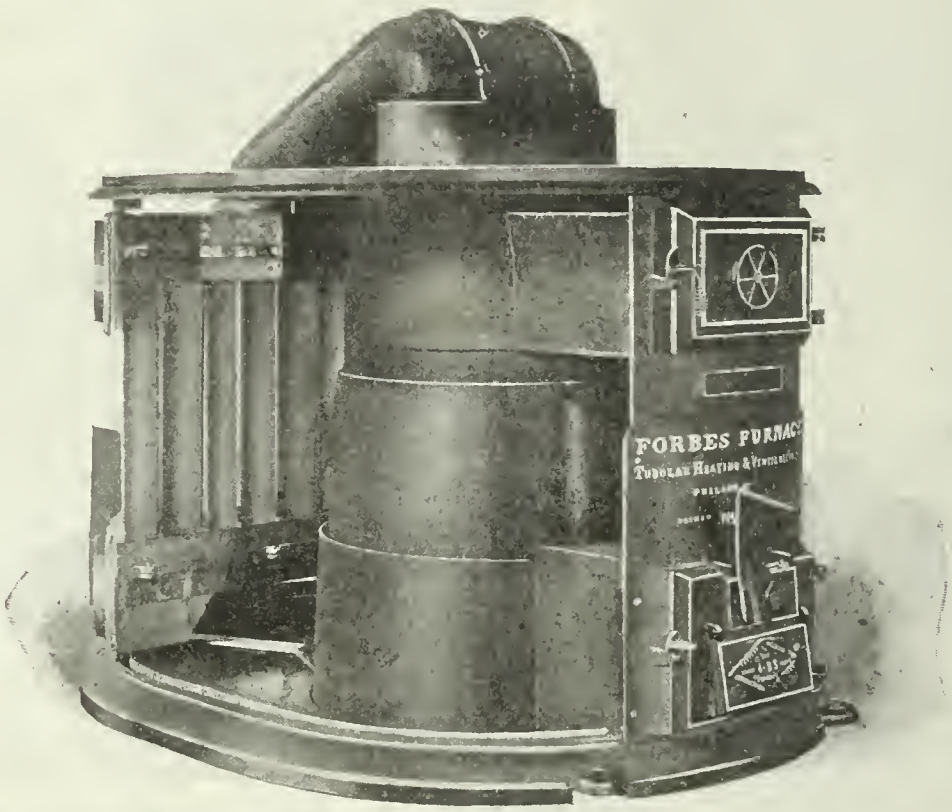
SALESROOMS:
133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.



MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.

A Radical Departure.

FORBES (Improved) WARM AIR FURNACE.

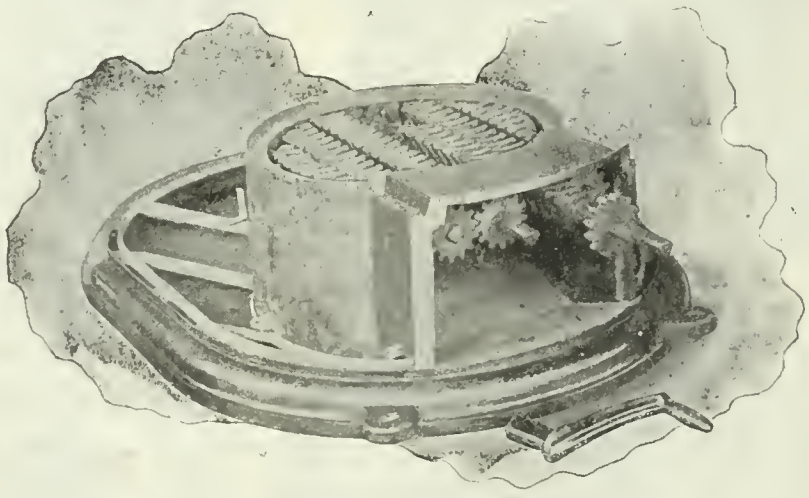


VERY LOW IN HEIGHT, 4 FT. 3 IN. OVER ALL, IN ALL SIZES.

Our aluminum radiating manifold is an entirely new principle applied to heating air. We save the heat that all other heaters allow to waste up the chimney, and send it through the house—saving coal for the consumer.

THE NEW TRIPLEX GRATE.

Perfect Shaking.



Perfect Dumping.

Furnished with the Forbes Furnace.

Can be easily repaired, each bar can be taken out separately and replaced without disturbing the other bars.

A FEW POINTS OF MERIT, DEMONSTRATED BY THE FORBES FURNACE: Being oval in shape, more pipes can be taken from it than from any other furnace.

Great durability and ***economy***—will last for years and is twice as economical as any other furnace.

Equal heat to all points, regenerative—burning ***all gases*** and—

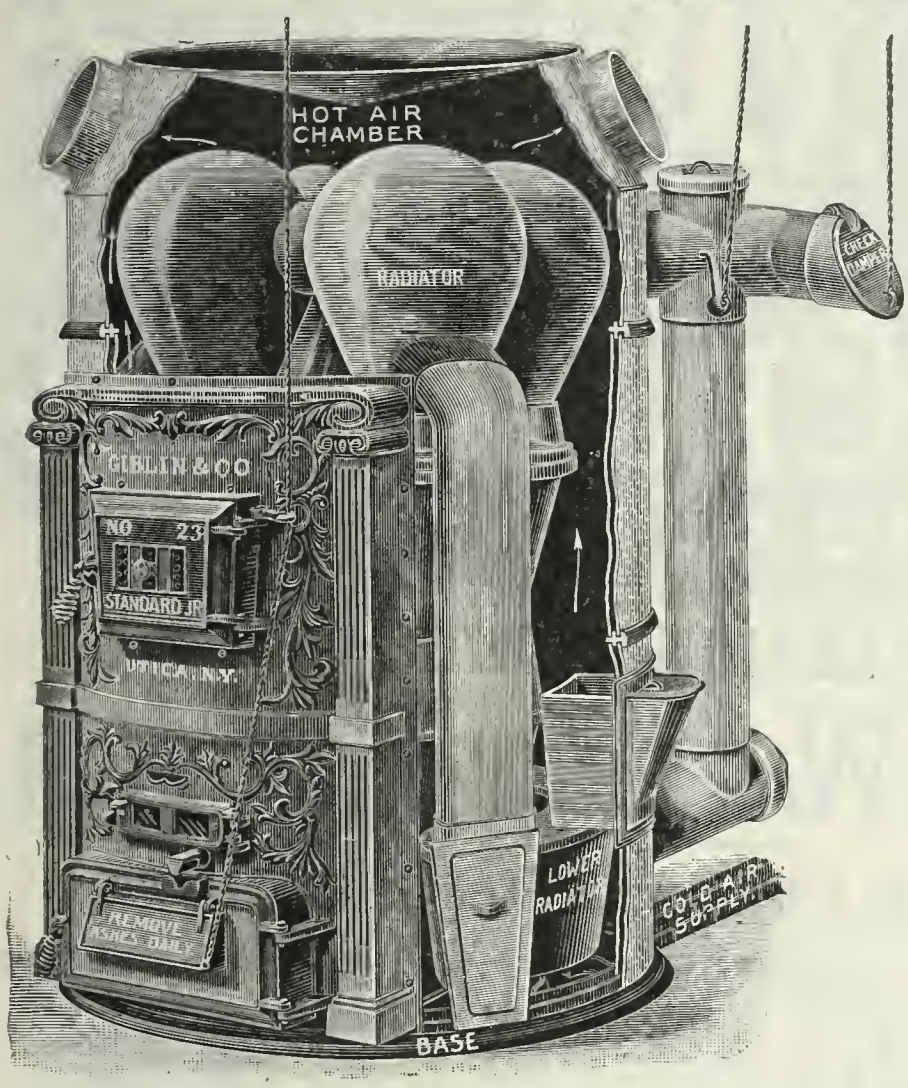
LOW IN PRICE—WITHIN THE REACH OF ALL.

WRITE FOR PRICES AND CATALOGUE.

TUBULAR HEATING AND VENTILATING CO.,

232 QUARRY ST., PHILADELPHIA, PA.

TOUCH A MAN'S POCKET



and you touch a sensitive spot. If your customer asks for a furnace and you furnish him with the cheapest furnace obtainable, it surely is not the best and he will judge all other furnaces by what he gets. He will by using the cheapest furnace, burn more coal than he should; will burn it imperfectly.

IT WILL

cause more work, need frequent repairs, make him thoroughly dissatisfied. Such are the results of a direct draft furnace. We present the furnaces illustrated herewith to

SHOW

what indirect draft furnaces can accomplish. Nobody now uses a direct draft heating stove, because of the waste of fuel and the impossibility of regulating it.

These Furnaces

are in furnaces what base burners are in stoves and

Secure

for the user the benefit

of **Heat** without

wasting fuel. They are operated with a steady, low fire, providing an even, continuous temperature

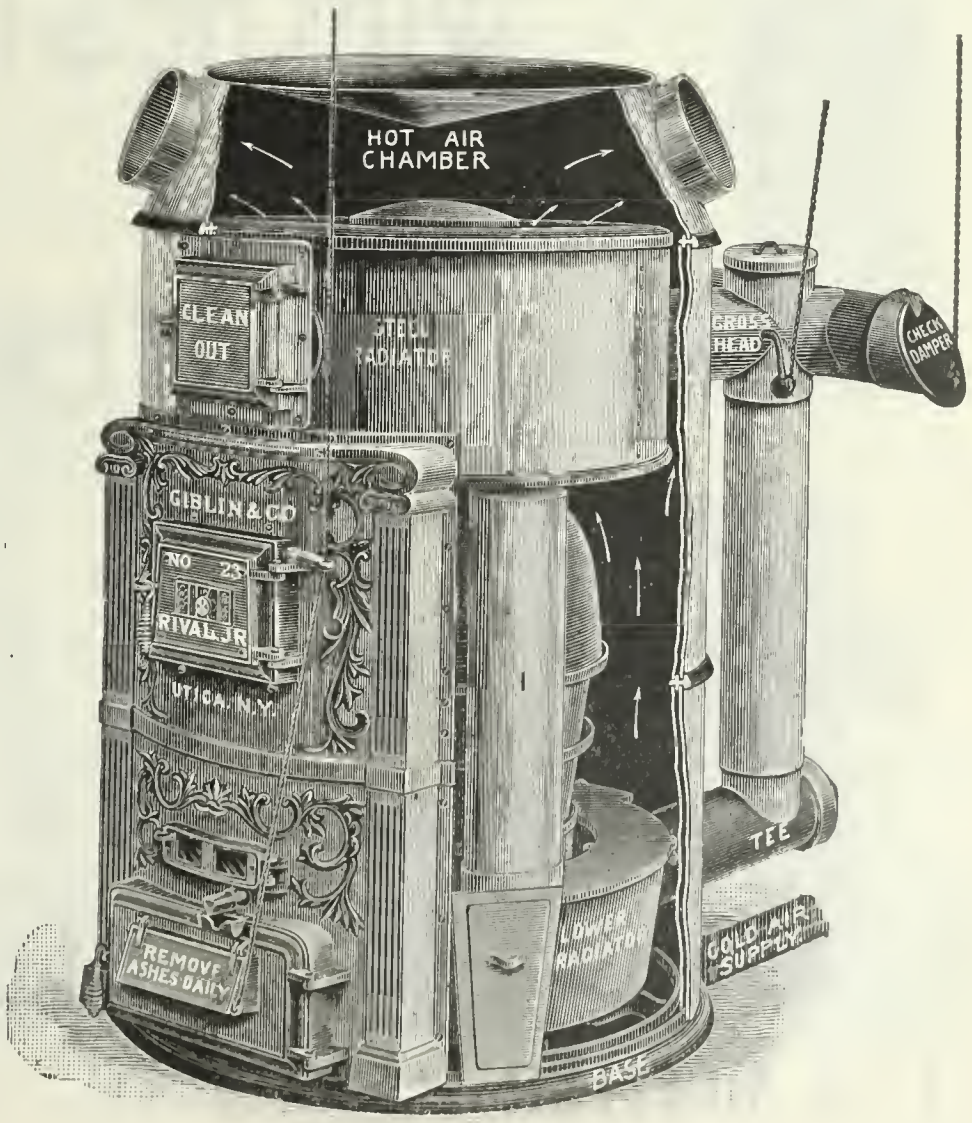
In Every Room.

Whichever dealer secures the agency of these furnaces is sure to get the bulk of the business; and because he is selling something different from all other dealers will make sales at a good profit and make every one sold an advertisement for his business.

Dealers who have sold other furnaces and have found no profit in the business should investigate the merits of these furnaces and secure the agency and exclusive territory.

OUR CATALOG FULLY EXPLAINS.

GIBLIN & CO.,
UTICA N. Y.



Royal Heaters

MANUFACTURED BY THE

HART & CROUSE Co.

UTICA, N.Y.

ALL THE LEADING LINES OF

STEAM, HOT WATER & HOT AIR,

FOR HEATING ALL CLASSES OF BUILDING.

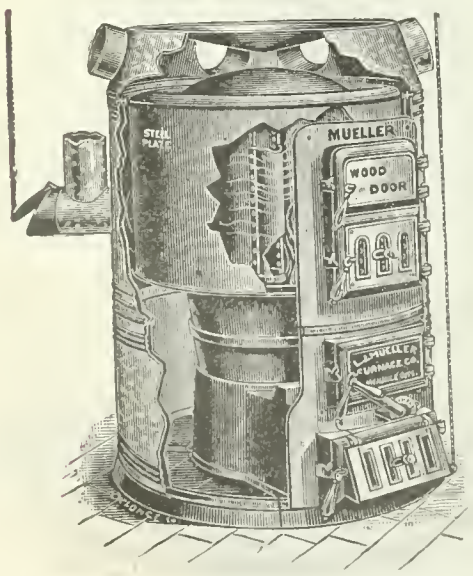
235 WATER ST., N.Y.
COLUMBUS, O.

BRANCHES. 79 LAKE ST., CHICAGO.
ST. LOUIS.

WINCHESTER

How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.

HEATER.



ENLIST

YOUR NAME
ON OUR ROLL OF CUSTOMERS
AND

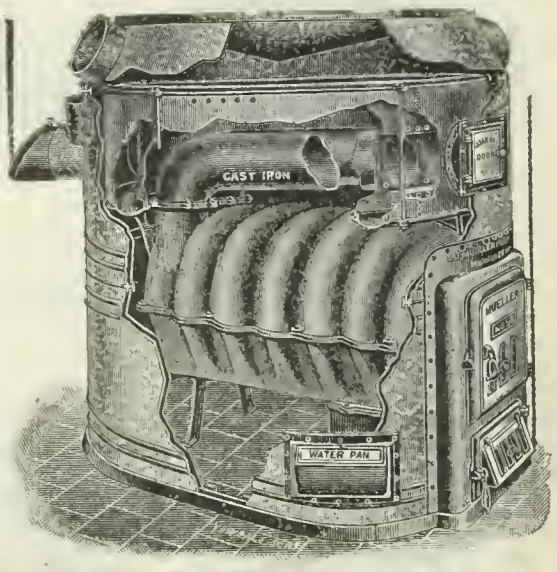
REAP A HARVEST

SUCH AS IS SURE TO COME TO DEALERS
WHO HANDLE THE CELEBRATED

MUELLER

FURNACES and BOILERS

WRITE FOR 1901 CATALOGUE AND PRICES.
GET OUR SPECIAL REGISTER OFFER.
ESTABLISHED 1857.



L. J. MUELLER FURNACE CO., 190 Reed Street, MILWAUKEE, WIS.

NOW is the time to THINK

HERO FURNACES
FAULTLESS FURNACES.
COMFORT FURNACES.
RIVAL FURNACES.

ABOUT THE... **FALL TRADE.**

We think we can help you to *find the Furnaces* you want.

Our catalogue is at your *service.*

Our variety is worthy of *your careful investigation.*

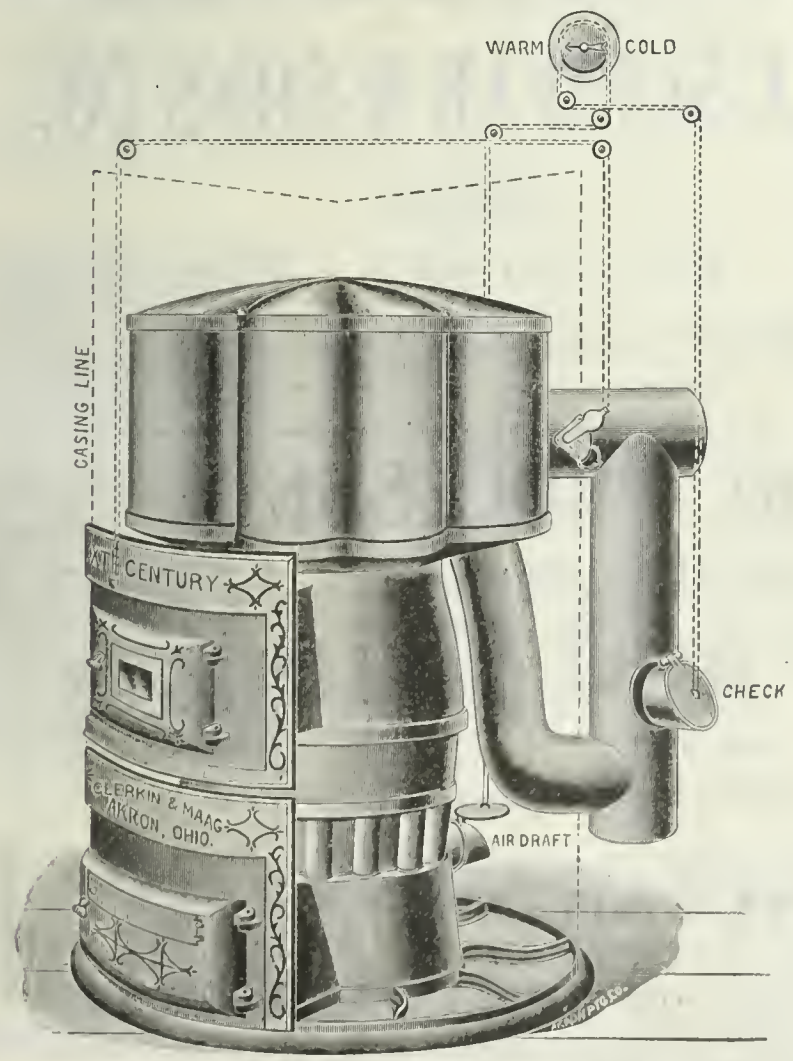
Our prices are reasonable.

We claim a good deal in the way of *economical, durable* and *effective* constructions, and are prepared to *prove* our claims

THE GRAFF FURNACE CO.,

208 Water St., NEW YORK.

NEW XXth CENTURY LINE OF HEATERS



Especially adapted to hard coal and wood. We will try to persuade you to order one sample only. We feel insured of the balance of your trade without solicitation. Our new catalogue tells all about the points of merit.

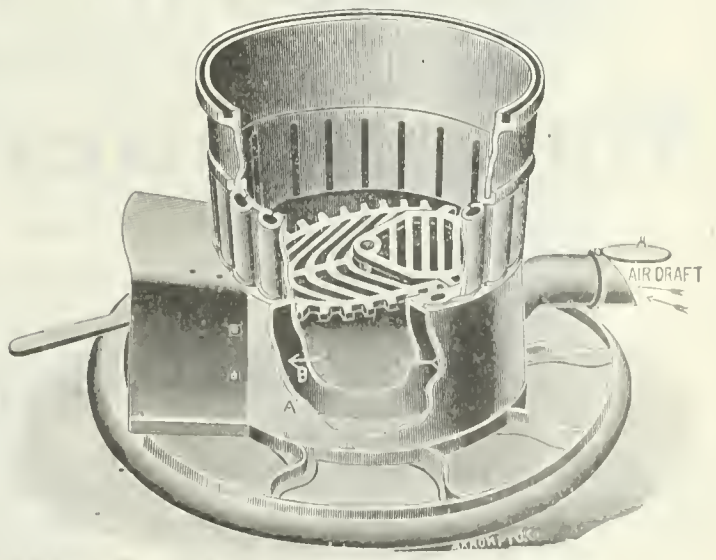
THE WORLD'S BEST HEATER.

Our soft coal line of heaters needs no introduction. It is already a world beater. Address

THE XXth CENTURY HEATING & VENTILATING CO.,

AKRON, O., U. S. A.

THE EXCLUSIVE FURNACE HOUSE OF AKRON.



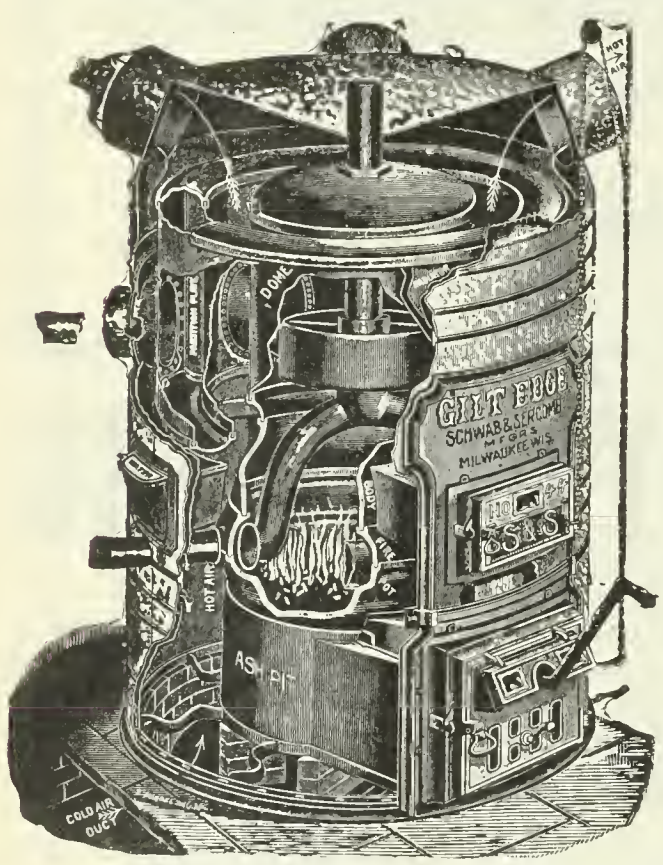
"We are not in a position to place order for car of Furnaces now.

"We do think, in the course of time, we may do so, as we are satisfied with the trial of those we have sold.

"The 'DIGHTON' has advantages over much more expensive Furnaces, especially in the ECONOMY OF FUEL."

The above is a fair sample of many letters of the same general character which we have in file, this particular copy having been made from a letter which we received May 1st from one of the best and, we think, one of the largest furnace dealers in the United States.

DIGHTON FURNACE CO., Taunton, Mass.



UTILIZED radiating surface, that is economy. Sectional fire pots from 1 in. to 2 in. thick and other parts in proportion, that is durability. Positive gas-tight joints, that is necessary to health. These, with all other improvements for ease of management, are combined in the Gilt Edge Furnaces. They are made for all kinds of fuel, and are the very best.

Write for Catalogue and Prices to

R. J. SCHWAB & SONS CO.,

Mfrs.,

MILWAUKEE, WIS.

E. E. DUNNING, Mgr. Furnace Dept.

KEEP UP WITH THE PROCESSION.

CONTRACTORS USING OUR BOILERS

Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

If this interests you drop us a line and receive our NEW Catalogues and Prices.

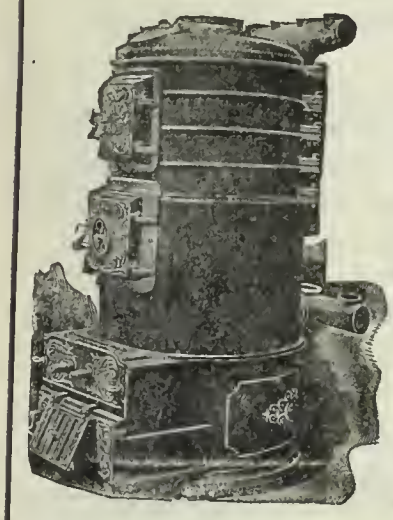
KEWANEE BOILER COMPANY

Home Office and Factory,

KEWANEE, ILLINOIS.

Chicago Store, 169 Lake St.

HONEST SERVICE ALWAYS.



George Washington's stamp on a barrel of apples always enhanced the value of the apples. For the buyer realized that if he branded it, the goods must be first quality and full measure.

"GURNEY" HEATERS,

BRIGHT IDEA, 400 SERIES and DORIC,

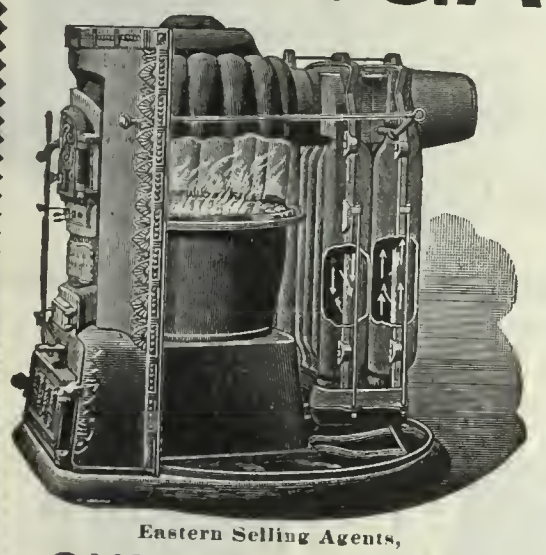
enjoy similar confidence. For the name of Gurney is a stamp of integrity. Durability and honest service have always been our aim. We admit our claims have been positive; but "Gurney" Heaters have fulfilled them all; so that *each heater placed is the strongest kind of recommendation for other business.*

There's just as pleasing a difference between selling "Gurney's" and selling other heaters as there is between doing any two other things, one of which is easy and the other hard. Wou'dn't you prefer the easy way? Then become a "Gurney" Agent. We shall be glad to hear from you at any time. Latest trade catalogue on request.

Gurney Heater Mfg. Co., 74 FRANKLIN ST., BOSTON.
111 FIFTH AVE., NEW YORK CITY.
222 to 224 Lake St., CHICAGO, ILL.

Western Selling Agents, JAS. B. CLOW & SONS.

BENGAL FURNACES



Have No Competitors In Their Line.

ALL CAST IRON.

More Radiating Surface Than Any Other Furnace Their Size.

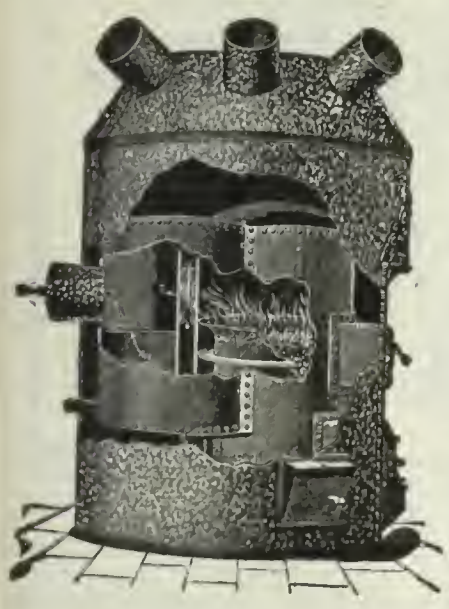
BENGALS BURN PERFECTLY ANTHRACITE or BITUMINOUS COAL OR COKE and HEAT THE HOUSE, NOT THE CHIMNEY.

Secure a BENGAL AGENCY at once.

CATALOGUE AND FULL INFORMATION ON REQUEST.

Eastern Selling Agents,
GURNEY & CO.,
Washington, Hanover & Elm Sts.,
Boston, Mass.

FLOYD, WELLS & CO.,
ROYERSFORD, PA.



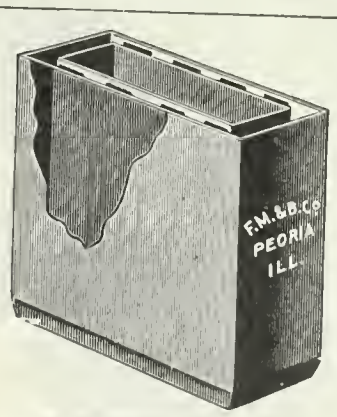
WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,
1300-1304 S. Washington St.,
SEND FOR CATALOGUE PEORIA, ILLS.



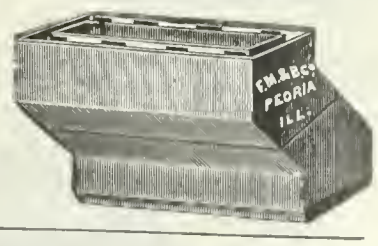
"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,
SEND FOR CATALOGUE. PEORIA, ILLS.



BRAND STOVE CO.

STOVES, RANGES and FURNACES.

SEND FOR CATALOG.

MILWAUKEE, WIS.

HOT WATER AND HOT AIR

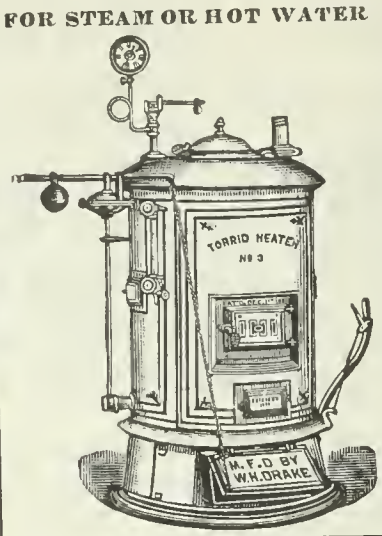
HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

"TORRID HEATER."
FOR STEAM OR HOT WATER



It is Practical in Design.
It is Safe, Being Tested to 200 Pounds.
It is Easy to Manage and Keep Clean.
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It is Sectional and Easily Handled.
It has No Packed Joints.
It is Self-Feed or Surface Burning.
It has the Torrid Patent Rocking and Dumping Grate.
It is Low in Price.

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FOR WOOD.

The Kineo Furnaces are built to secure durability and heating qualities. The smoke enters the radiators on the back and passes entirely around the radiator before entering the chimney, making them the most powerful heaters known. Also manufactured in two sizes with steel radiators.

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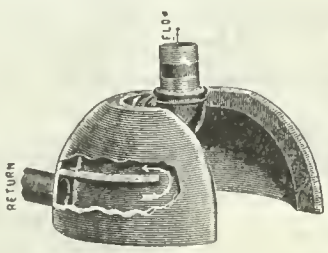
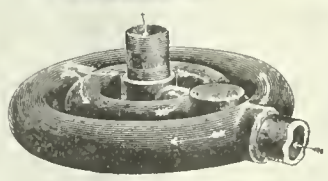
The Champion
Hot Water Combination Boilers.

They Fit Any Furnace.

Base section when used without ring sections.



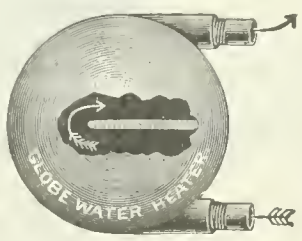
Ring Section.



These Boilers are made in three sizes diameter, and from 100 to 600 square feet radiation capacity.

Will heat those cold rooms, or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work.

GLOBE WATER HEATER
Attached to any Furnace will heat water for domestic use.



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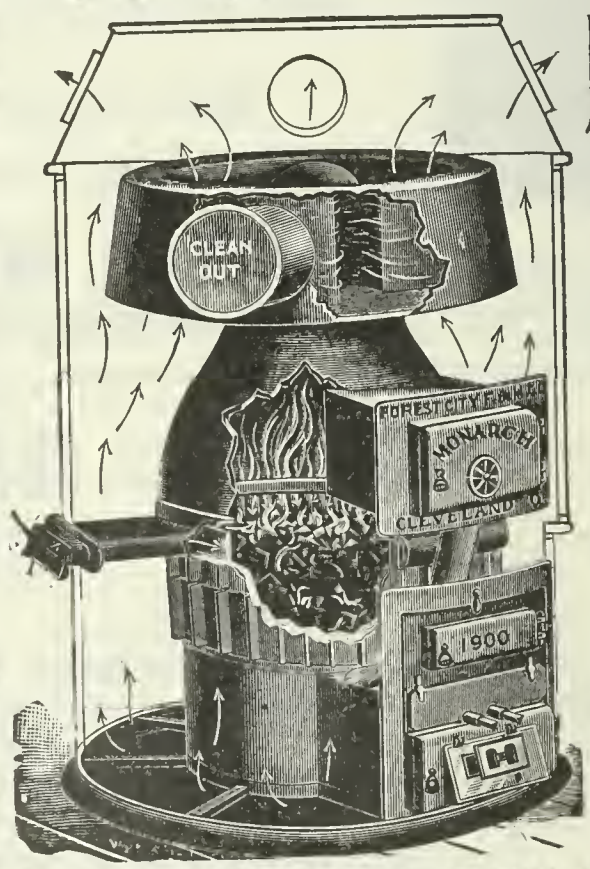
115 Lake St., - - Chicago, Ill.



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Inquiries Solicited.

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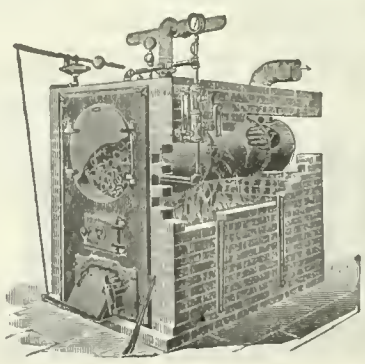

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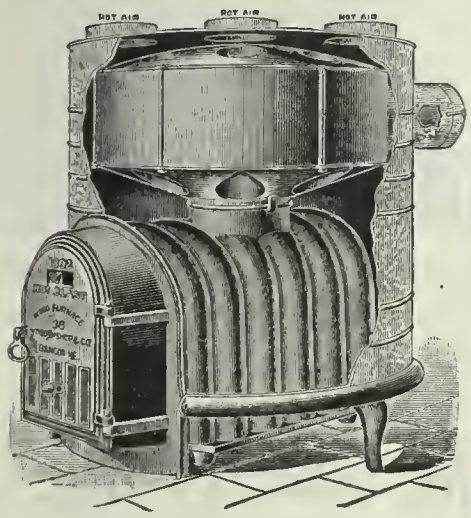

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OUR IMPROVED MONITOR.

The most powerful heater made.

2 SIZES, PORTABLE OR BRICK SET.

No. 38 for 3 ft. wood. No. 50 for 4 ft. wood.

OUR LOW PRICED HOT BLAST.

The most practical, durable heater on the market at anywhere near its cost.

FIRE BOX BODY made in one piece, corrugated, is very heavy and cannot break or warp.

RADIATOR with heavy cast iron heads, heavy plate iron shell and hot air flues, has extra large radiating surface and is self cleaning. Every part of radiating surface is directly exposed to fire, allowing no possibility of creosote in the apparatus. No wood grate. Fuel burns on the ashes in the only practical, economical way.

3 SIZES, PORTABLE OR BRICK SET.

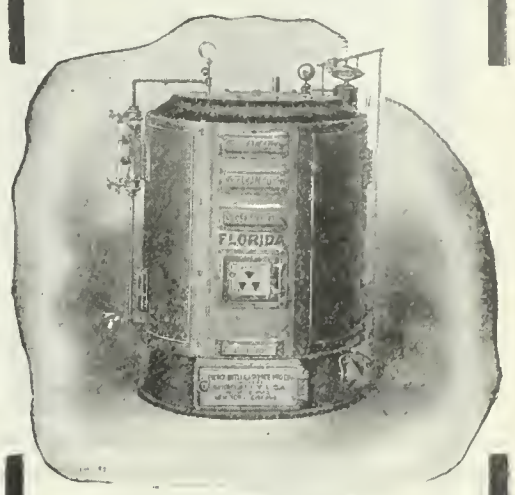
Nos. 36, 42 and 48, for 3, 3½ and 4 ft. wood.

Thousands in use in all sections of the country.
Testimonials and full particulars sent on application to the manufacturers.

Established 1839. Incorporated 1894. **WOOD & BISHOP CO., BANGOR, MAINE.**

Pierce Boilers Perfect Burners

For Steam and Water Heating.



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GREATEST VARIETY OF SIZES AND STYLES.

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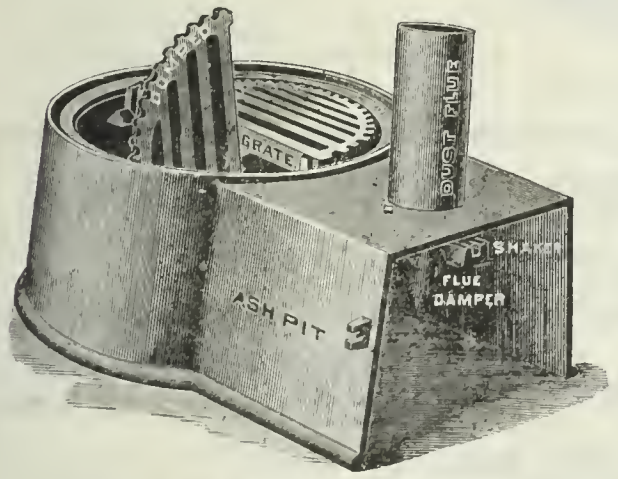

FOR SOFT COAL.

MADE IN 5 SIZES—Nos. 1½, 2, 3, 4 and 5.

Are the result of many years' experience, thought and observation. Of the large number of furnaces which we have sold, we do not know of a single instance in which the operation has not been successful and the furnace a source of satisfaction to the buyer, which is the best evidence we can offer to the trade of the value and desirability of our furnaces.

Write for Cat. and Prices.

E. L. BLACK & CO.,
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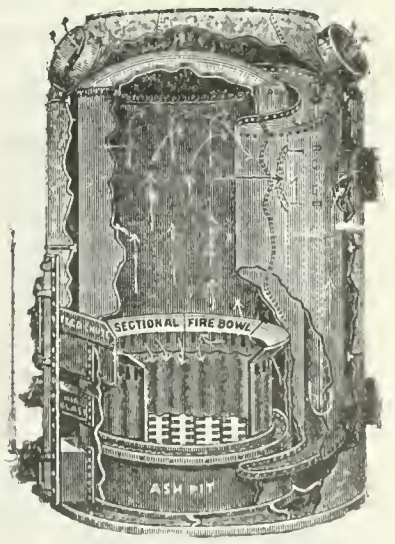

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MADE BY

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East Fredrick St., Marshalltown, Iowa.
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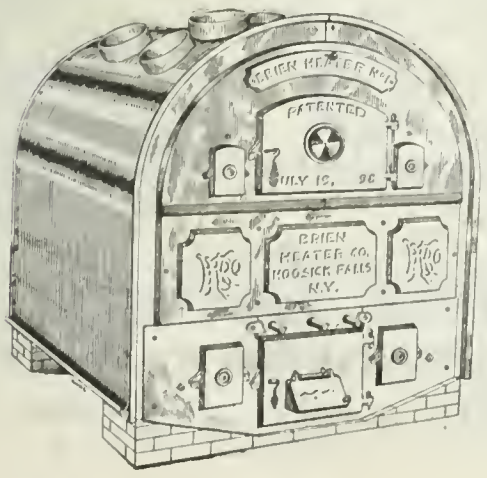

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A perfect, all cast WOOD or COAL burner. There is no other Hot Air Furnace as low down as the "BRIEN."

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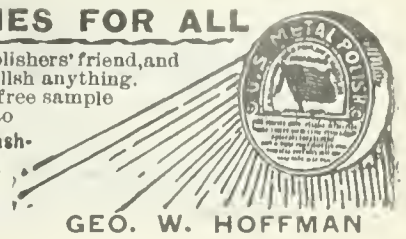

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HERE'S a caster that is a CASTER. Fits any stove without adjustment; handy; portable; get-at-able when sweeping under the stove; better than a truck.

For moving or use under stoves on sample floor, blacking room or warehouse. Easily moves the heaviest weight. Enables one man to move a stove. Plain or Roller Bearing.

You need this in your business.

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THE STEAM AND HOT WATER FITTERS' TEXT BOOK.

140 Pages. Cloth.

TELLS HOW

To Estimate Radiation.
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And Many Other Important Things that Good Workmen Must Know.

ILLUSTRATED.

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We believe there is a chance for the consolidation of all, or nearly all, the stove foundries of this country into a gigantic trust.

This concern has not been approached and will not be a part of the scheme.

We shall continue, however, to make patterns for any one having the price. Do you handle a hundred Oak stoves or steel ranges in a year? If so, it will pay you to own your own patterns—get castings from your local foundry and quadruple your profits.

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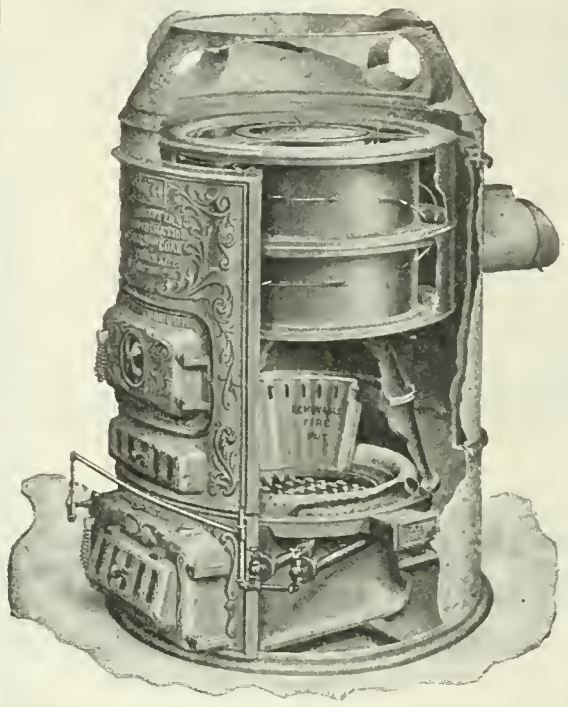
Schaffer's Combination Gas and Coal Furnace.



The Most Economical and Durable Gas Furnace On the Market.

It will heat a house as cheaply with Gas as with Hard Coal, and is so arranged that the change from one fuel to the other can be made in a few minutes, without removing the burner or grate, or disconnecting the gas piping.

Absolutely No Condensation.

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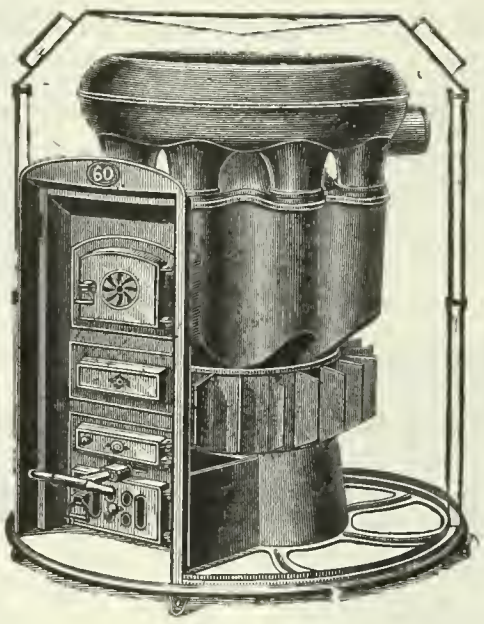

CORY'S Gas-Tight Single Section Heaters. *Large Surfaces*—all good. No "*Steel*" or "*Sheet Iron*" to rust out.

ONE QUALITY ONLY.

All Cast Iron—No Bolted Joints.
Twenty Sizes—Portable and Masonry

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COOKING and HEATING STOVES

and STOVE HOLLOW WARE.

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Stove Dealers

will make money and save money by using

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There is nothing equal to it for repairing fire brick in stoves, furnaces etc. Let us send you sample and prices.

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JEWEL STOVES AND RANGES
DETROIT STOVE WORKS
LARGEST STOVE PLANT IN THE WORLD

A Complete, Well Advertised Line; Low Prices and Good Workmanship.

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FOR WOOD.

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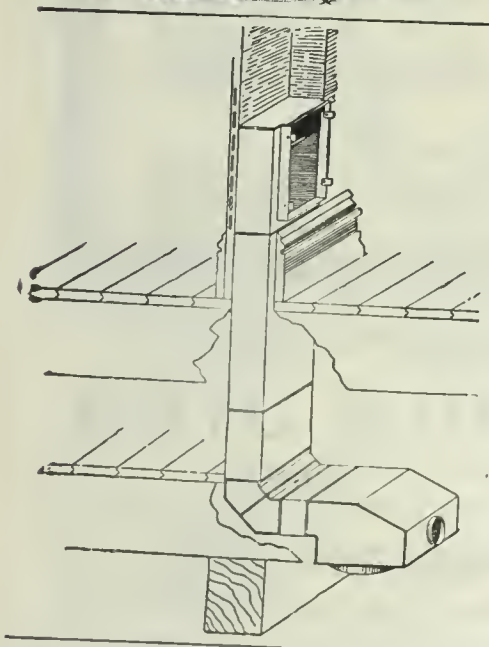

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FOR A MOMENT

To put into it several reasons why you should use

SAFETY FURNACE PIPE.

THE PRICE IS RIGHT.
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WORKMANSHIP IS RIGHT.
And the Best Design and Joint on the Market.

We have many more reasons, and good ones too, contained in our catalogue, which we shall be glad to mail you on request.

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HOT WATER GENERATORS
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"O.H." ONE PIECE STOVE PIPE Elbows

Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM In throat or under side of Elbow.

HANDSOMEST, HEAVIEST AND STRONGEST STOVE PIPE ELBOW MANUFACTURED.

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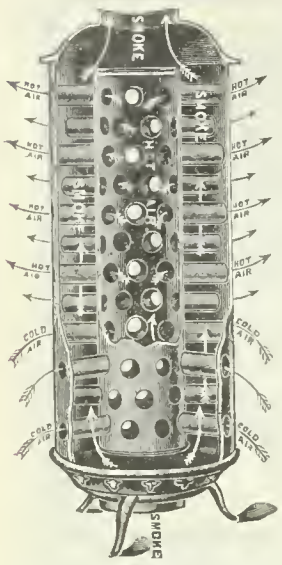

4,866 sq. ins.

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Everything right,
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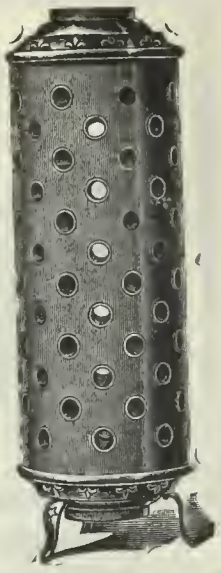

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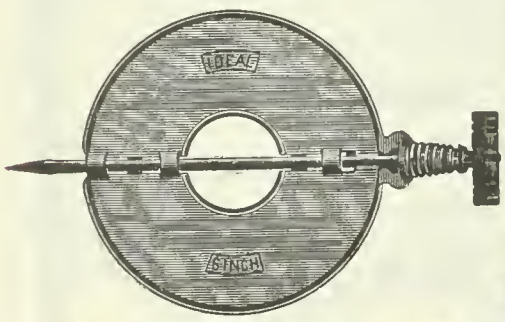
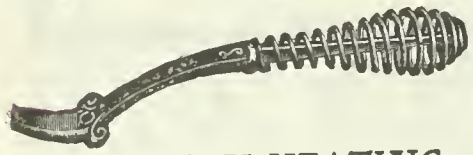
100 Furnace St., ROCHESTER, N. Y.

IDEAL DAMPERS, COVER LIFTERS



AND POKERS



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Stove dealers' SUPPLIES of all kinds.

Water Fronts a Specialty.

WE GUARANTEE PROMPTNESS IN FILLING ORDERS

Catalogues, Order-Books, Postals or Envelopes sent upon application.

Largest Jobbers in New England.

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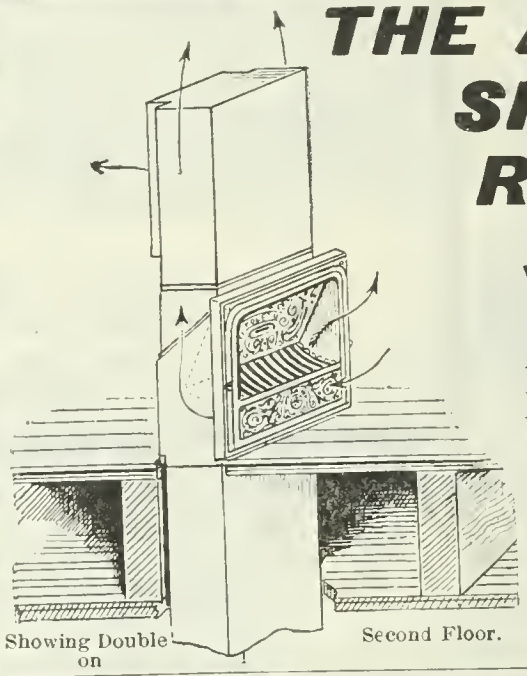

Showing Double on Second Floor.

Takes Less Pipe, Wall Stacks and Fittings.

Includes Register Box, hence is cheaper than common Registers.

No Mutilation of Carpets.
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Affords Perfect Ventilation.
Made in Nine Sizes.
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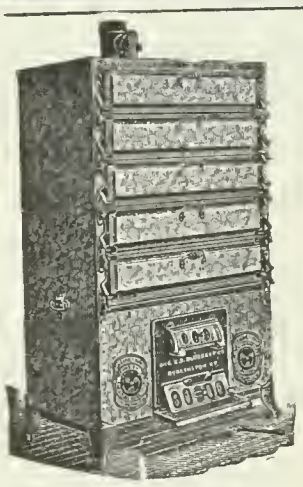

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BAKES EVENLY BY THE CIRCULATION OF HOT AIR.

FOR BAKERS, CONFECTIONERS, HOTELS,

Also the best oven for Core Baking, Japanning, Enameling, etc.

Made in six sizes, single and double, for coal, wood, natural or artificial gas.

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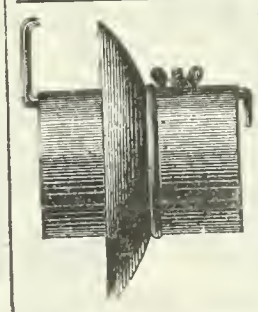

HAYLOR'S HOLD FAST STOVE PIPE

Is made 9⅛ inches long, each joint is ready, fitted with fastening device, and beautifully designed gilded collar, which measures 10⅛ inches in diameter for the six inch pipe, and 11⅛ inches in diameter for the seven inch pipe. Is sold with a guarantee that it will hold the stove pipe firm to the flue, and at the same time the pipe will not go in flue over 4 inches. Is absolutely tight and will not come loose. They are packed a half dozen, complete, to each crate.

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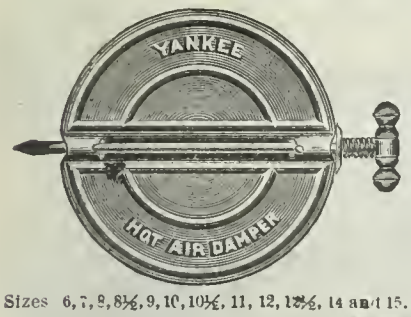
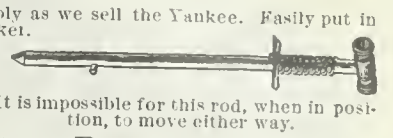


The YANKEE Hot Air DAMPER (Improved All Steel.)

THE YANKEE EXCELS.

Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

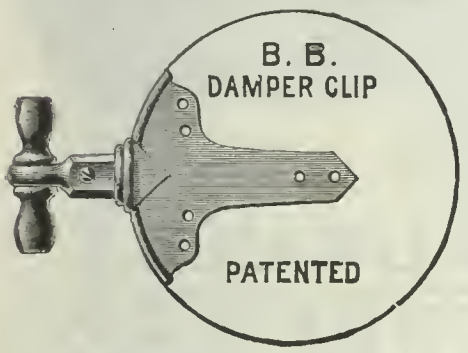
ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod is made of ¼ inch cold rolled steel and slips into damper very smoothly. **Sample sent to any Dealer without charge.**



It is impossible for this rod, when in position, to move either way.

The S. M. HOWES CO., Manufacturers, 40-46 UNION ST., **Boston, Mass.**

Sizes 6, 7, 8, 8½, 9, 10, 10½, 11, 12, 12½, 14 and 15. NEW YORK: A. L. Canfield, 284-286 Pearl St. CHICAGO: Excelsior Steel Furnace Co.



The B. B. Patent DAMPER CLIP

To remove Handle, simply loosen Nut *half way*—unnecessary to remove Bolt.

BEST AND CHEAPEST.

Send for Sample and be convinced.

All kinds of Dampers—Plain, Uncle Sam, American and others always in stock.

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BERGER BROS. CO.,

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THE MALLEABLE IRON

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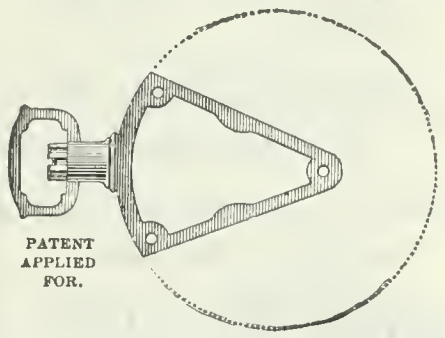

EASILY ADJUSTED
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WRITE FOR PRICES.

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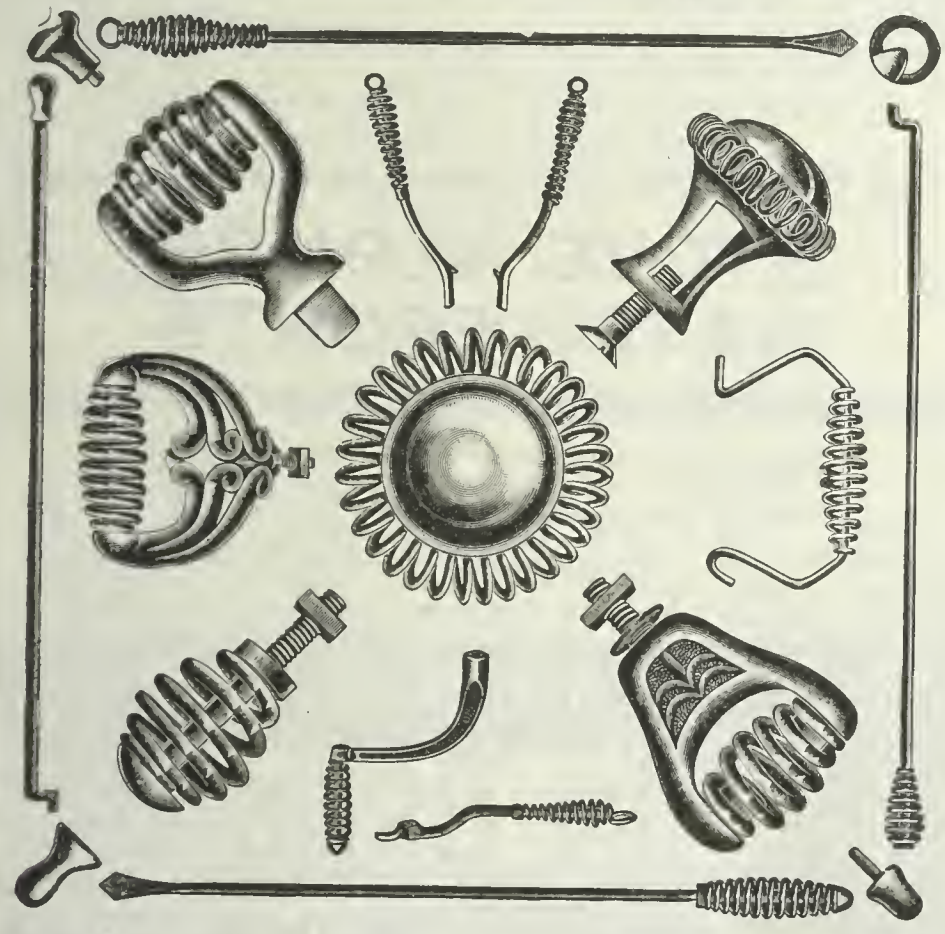

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FOR SMART WORK

Use only "The Dean" Boilers

MADE BY

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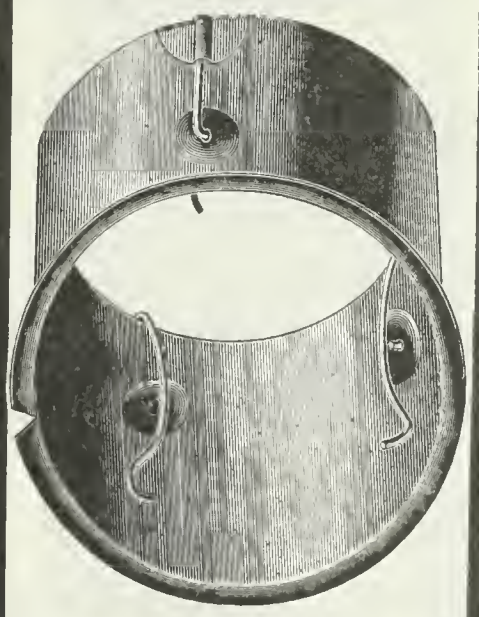
The S. & S. Patent

Stove Pipe Thimble



Locks the Pipe from Pulling Out, and from Pushing In and Closing the Draught. Will last a lifetime. Nothing to wear out, and costs but a trifle. Send for sample and prices.

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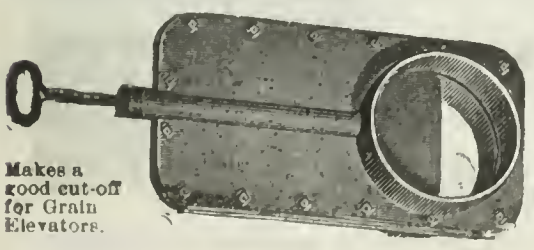

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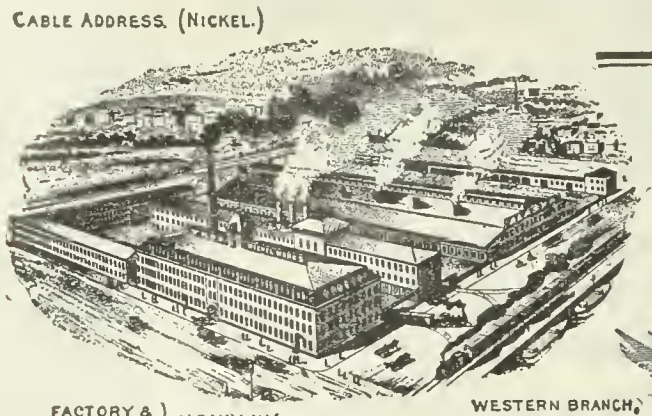

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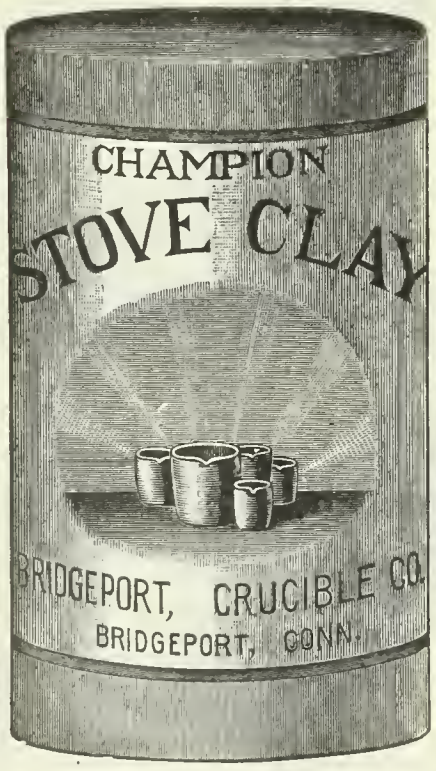

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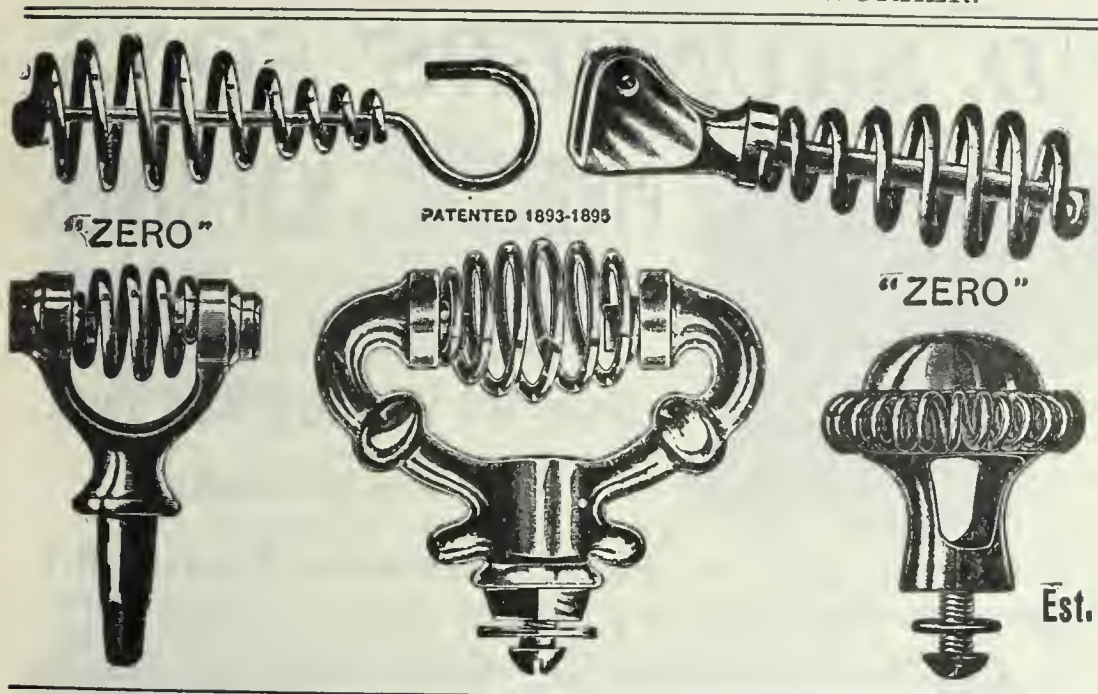

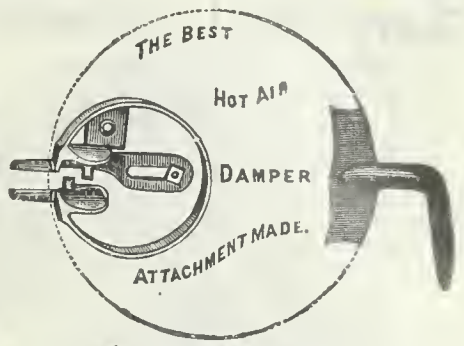

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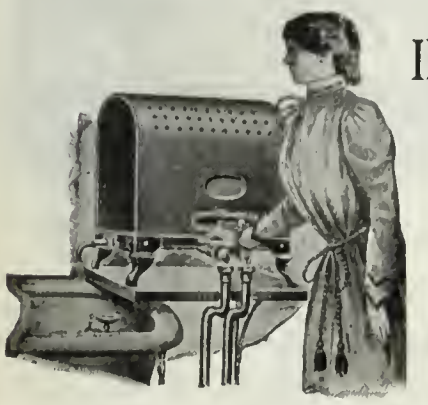

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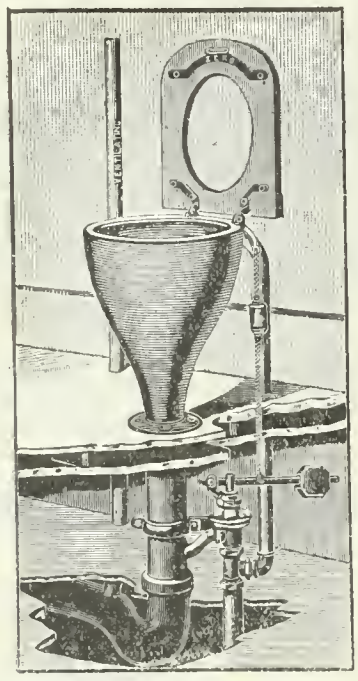

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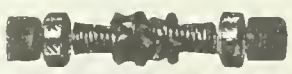

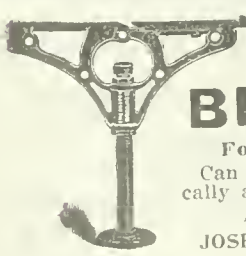

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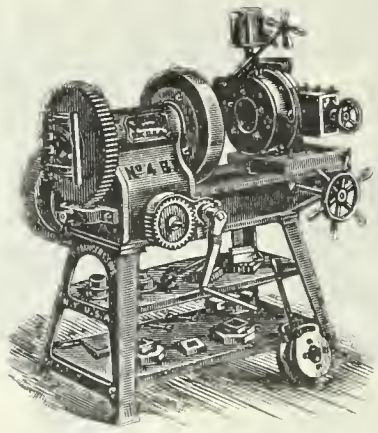

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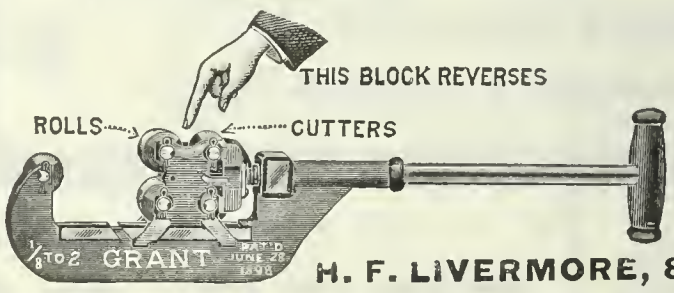

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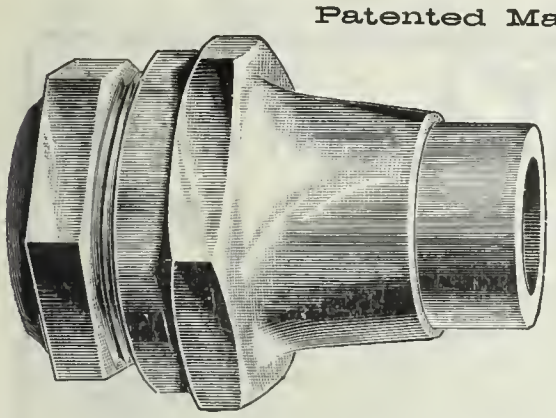

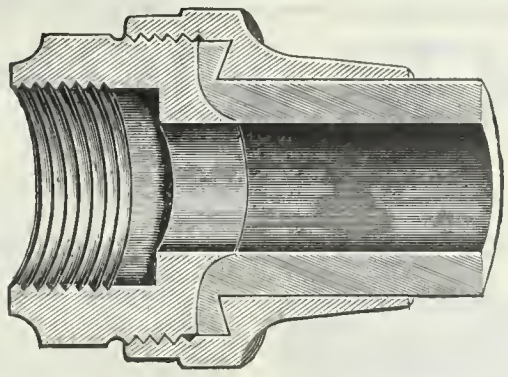

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FOR PURE WATER.

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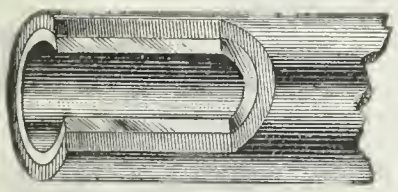

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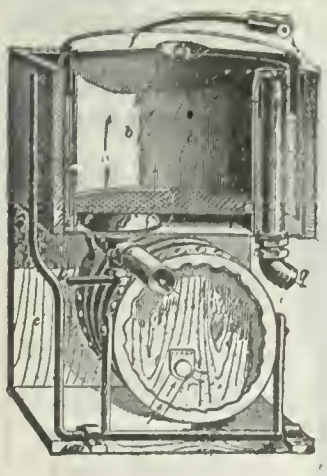

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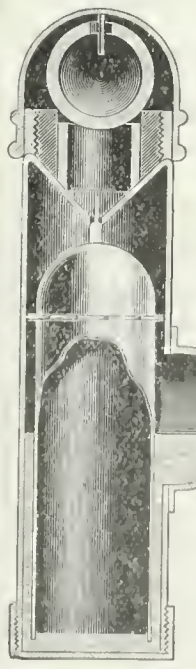

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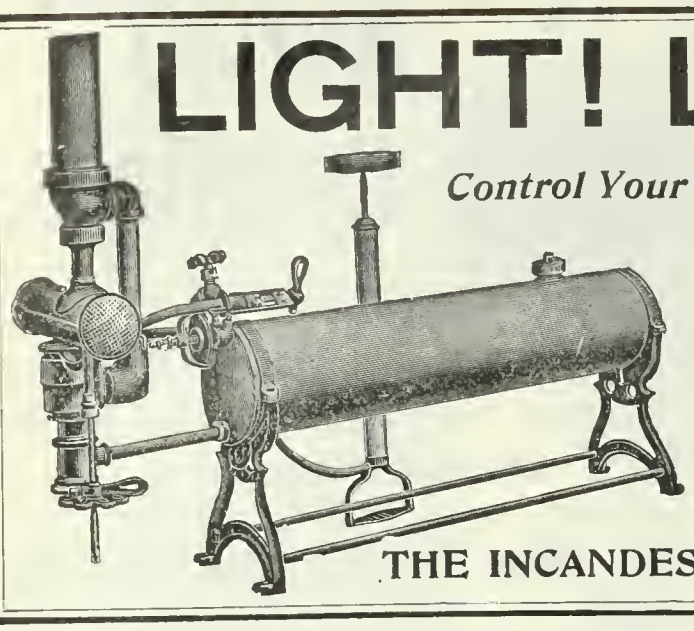

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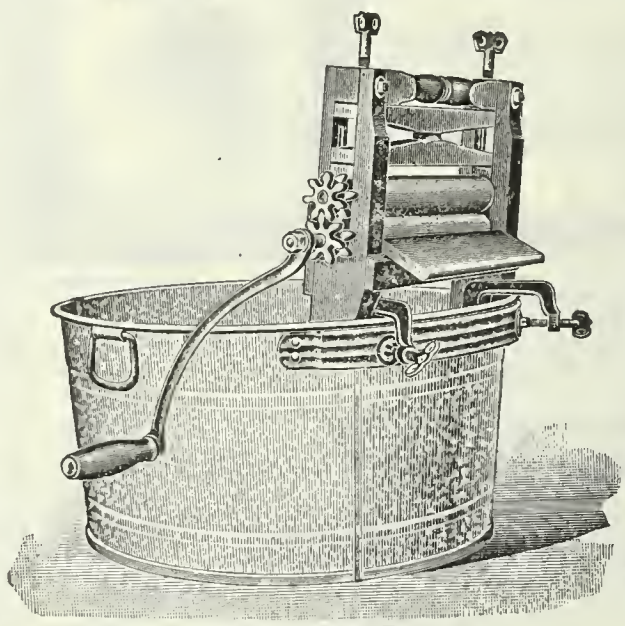

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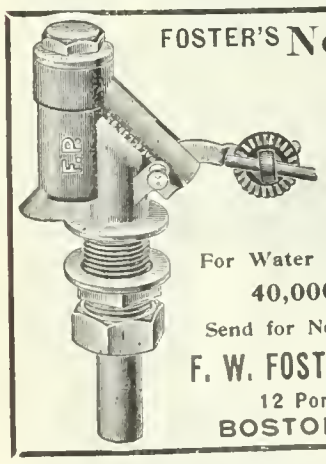

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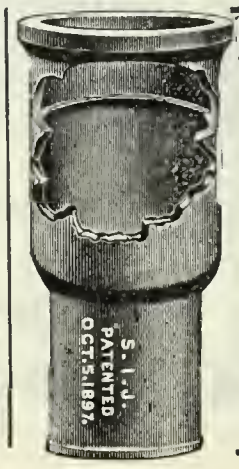

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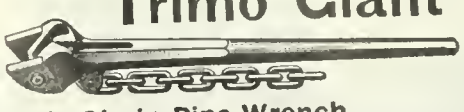

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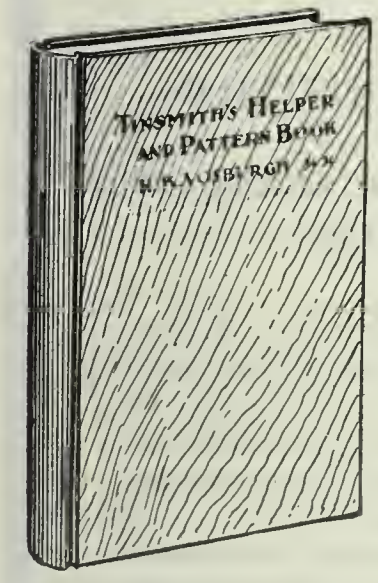

We present a new and improved edition of this useful book, believing it to be one of the most important assistants to tinners and other mechanics that is published. The diagrams and patterns are now illustrated by means of new engravings, greatly improving the appearance of the book. The tables, rules and recipes have been carefully revised, these, with important additional tables, being printed from new type.

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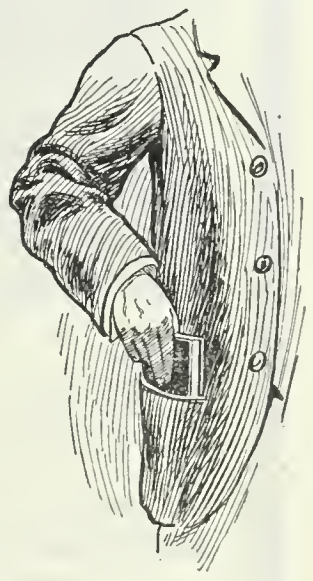
The Tinsmiths' Helper is not intended to be a comprehensive treatise on sheet metal pattern cutting, which field is covered only by "The New Metal Worker Pattern Book," but it contains a collection of patterns of the most common occurrence, described in the plainest way. It meets the requirement of a simple hand-book for young tinners, and will be an invaluable aid to all sheet metal workers for the compilation of tables and rules alone. A list of the contents is given below.



DIAGRAMS AND PATTERNS.

To Find the Center of an Arc.
To Describe an Octagon Within a Given Square.
To Describe an Octagon Within a Given Circle.
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To Describe Patterns for Flaring Tinware.
The Old German Rule for Patterns for the Cone.
Frustum of a Cone.
Flaring Vessel in Three Pieces.
Rectangular Funnel.
For Strainer Pail or Watering Pot Breast.
Scale Tray or Scoop.
To Find Length of Sheet Required for Oval Boiler. Common Method.
Oval Boiler Cover.
Measure Lip.
Steamer or Pitched Cover.
Heart with Square and Compass.
To Describe a Star.
Pattern for Cutting Balls. To Describe the Gores.
To Describe an Oval.
To Describe Oval with Diameters as 5 to 8.
To Describe an Oval Two Other Methods.
To Describe Oval by Means of String, Pins and Pencil.
To Describe Pattern for Flaring Oval Vessels. Two Pieces.
To Describe Pattern for Flaring Article with Straight Sides and Round Ends. Two Pieces.
To Describe Pattern for Oval Flaring Vessel. Four Pieces.
To Describe Pattern for Flaring Hexagon Article.
To Describe Pattern for Flaring Square Vessel.
To Describe Pattern for Flaring Article with Square Top and Base a Rectangle. Two Pieces.
To Describe Tapering Octagon.
Flaring Article, Top and Base a Rectangle. Two Pieces.
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Square Base and Round Top Article. Two Pieces.
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To Describe Elbow. Quick Method.
To Describe Three-Piece Elbow.
To Describe a Right Angle Elbow. Four Pieces.
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To Describe Pattern for Obtuse Elbow.
To Describe a Tapering Elbow.
To Obtain Length of Piece for Tea Kettle Body.
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String Pattern.
Description of Boiler Block.

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Mensuration of Cylinders.
Mensuration of Spheres.
Mensuration of Polygons.

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Table of Weight per Square Foot of Iron Plates, from 1-16 up to ½ Inch Thick.
Rule for Finding Weight of Sheet Lead.
Table of Decimals Equivalent to the Fractional Parts of a Pound.
Table of Decimals Equivalent to the Fractional Parts of an Inch When Divided into 32 Parts; Likewise the Decimals Equivalent to the Fractional Parts of a Foot.
Table of Ordinary Dimensions of Galvanized Sheets.
Table of Weight of Galvanized Sheets.
Table and Rule to Ascertain the Weights of Pipes of Various Metals and Any Diameter Required.
Table of Weight per Foot of Lead Pipe.
Table of Net Weight per Box Tin Plates.
Table of Approximate Weight of Zinc Sheets.
Table of Relative Weights of Aluminum and Copper Sheets.
Tables of the Areas and Circumferences of Circles.
Table of Capacity of Cans 1 Inch Deep.
Rules for Calculating Circumferences.
Table of Weight of Water.
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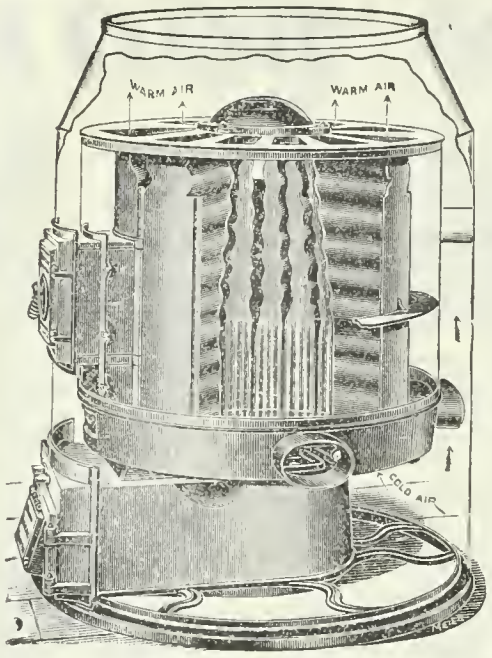

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THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, July 13, 1901.

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Volume LVI.....No. 2
Index to Reading Matter.....Page 60

A Half Year's Failures.

The healthful condition of things existing in the business world during the first half of the present year is illustrated in the figures of six months' business failures in the United States, given by *Dun's Review*. These statistics show that commercial failures for the six months ended June 30, 1901, were 5804 in number, with aggregate liabilities of $71,645,244, as against 5362 in the same period of last year, when the liabilities amounted to $100,570,134. The increase in the number of failures is attributed to the fact that a large number of small traders went under in June, following the panic in the stock market in New York. It will be observed, however, that the aggregate liabilities this year were nearly $30,000,000 lower than those of the first six months of 1900. Of the failing concerns, 1265 were manufacturers whose aggregate liabilities were $21,691,000, while 4189 were traders owing $24,364,000, a decline of about $3,000,000 in manufacturing and $5,000,000 in trading as compared with a year ago. One especially interesting and favorable feature connected with the commercial mortality of the past half year is the fact that the average liabilities per failure were smaller than in the corresponding period of any other year in the past twenty-five years, with the exception of 1899. Considering the record of failures geographically, it is found that there was an increase in the number of defaults in New England, almost wholly in Massachusetts and Connecticut. In New York City there were many more small failures than a year ago, largely on account of the reason above given, but in almost every other part of the country a marked decrease in the amount of defaulted liabilities is shown. Thus in New York State, New Jersey and Pennsylvania the aggregate of liabilities was about $17,800,000 in the first half of this year, as against $32,917,000 last year. Failure records are scarcely less valuable as a gauge of prosperity than bank exchanges and railway earnings, and as these three business weather vanes all point in a favorable direction, there is every reason to look for a continuance in the future of the prosperity which so clearly marked the first half of the year.

The Fire Waste.

The record of fire losses for the month of June, as compiled by the New York *Journal of Commerce*, shows a gratifying decline from the remarkably heavy losses recorded for the first five months of this year and for the whole of the year 1900. The loss for June amounted to $9,599,000, as compared with $22,380,000 in the preceding month, and $21,281,000 in June, 1900. The aggregate of fire losses for the first half of 1901 is given as $88,935,000, as against $103,299,000 during the same period of 1900. The June fire loss of last year was swollen by the great Hoboken disaster, but even taking that into consideration the very marked decline shown last month indicates a welcome change from the expensive experiences which the fire insurance companies have had for almost two years past. Yet it appears to be a larger sum than should be wasted in one month, when we consider the improved fire fighting facilities possessed by our cities and towns, and the fact that legislation aimed at the prevention of fire has been so widely adopted. Taking the city of New York as an example, the losses by fire in the boroughs of Manhattan and the Bronx alone amounted last year to $7,500,000, and during the past three years to $17,835,000, as compared with $10,197,000 during the preceding three years. This big increase has naturally given the underwriters much concern, and they have been making an investigation of the causes. The result of the investigation is a severe arraignment of the city Building and Fire Departments, which are held to be responsible for the non-enforcement of the laws intended to protect buildings against fire.

Good Counsel on Strikes.

President Samuel Gompers of the American Federation of Labor has issued a circular to all of the affiliated labor unions which contains some very sensible advice against hasty action in declaring strikes. This proceeding, Mr. Gompers says, was rendered necessary by the action of a number of unions entering into strikes too hastily, which strikes have proved very costly and at the best only partially successful. The circular says in part:

No strike shall be ordered until every effort has been made by a committee to settle the differences with the employer.

A strike should be inaugurated only as a last resort.

A conciliatory policy is more advantageous than contest. Arbitration should be offered before a strike has begun. It is easier to adjust a difference before a strike than after.

Whenever the question of strike is to be voted upon a secret ballot should be had and each member required to write his own ballot.

When the union enters into an agreement with an employer its terms should be faithfully kept, regardless of temptations to break it.

This is sane and wholesome advice and timely withal. If the principles set forth by the president of the American Federation of Labor were generally adopted and honestly acted upon by all the labor organizations of the country, the strike as a weapon of offense would rarely be resorted to, and much unnecessary loss and suffering would be avoided. The strike should be used, as Mr. Gompers says, only as a last resort after all efforts in the line of conciliation and arbitration have been exhausted. Unfortunately it has been inaugurated too often in the past on the first impulse. It is a gratifying thing, however, to find one of the most prominent and influential labor leaders of the country coming out squarely in favor of justice and common-sonsible action in a matter so vital to the industrial welfare of the United States. If employers and employed would at all times act on the principles laid down in his circular, instead of acting as

if their interests were fundamentally antagonistic, how much trouble would be obviated and how smoothly the wheels of industry would run.

Problem 218.

As an example of how much may be involved in complying with what is seemingly a simple request, we call the attention of those interested in intricate pattern cutting to an article on another page by the author of "The New Metal Worker Pattern Book," entitled "Problem 218." While the problems in the work referred to are necessarily made as concise as possible, many of them are capable of interesting amplification. There is probably no more complicated form to the pattern cutter, or, in fact, to any one interested in architectural construction, than that of an arch in a curved wall, the subject treated in the above mentioned problem. The simplest means of arriving at a result which is only hinted at in the problem, but which is asked for by a correspondent, involves conditions and operations not usual in ordinary patteru cutting. The article treats of the method of developing the blank from which a mold is to be raised for au arch in a curved wall, the profile of the arch being drawn in compliance with certain requirements. The demonstration is carried only to the point of obtaining the plan and elevation of the splayed or beveled surface of the blank, leaving subsequent work of triangulation to be dedueed by inferenee from methods given in previous problems.

The monthly blast furnaee statistics published by *The Iron Age* show that there has been a slight decline in the weekly capaeity of the pig iron furnaces from 306,991 tons on June 1 to 303,793 tons on July 1, while the stocks of pig iron in the hands of the furnaees deelined from 333,813 tons on June 1 to 327,761 tons ou July 1. In other words, reduction and consumption at present are nearly evenly balanced. So far as the existing plants are concerned, our capacity for the production of pig iron is now pretty close to the maximum. While a number of new furnaces will blow in during the next few months, the old plants are pretty well strained to the utmost, and there is likely to be a good deal of blowing out for repairs. From all quarters there is evidenee that the consumption of Iron is phenomenal, but while the situation statistically is exceedingly sound, there is in the trade an uncertainty and an ill defined feeling that we are on top of the tide, and that slowly receding values may be seen.

The official circulation statement published on July 1 shows an increase for 12 months in the amount of money in the country, including Treasury bullion, of no less than $143,866,932. Of this increase, $21,751,650 is the growth iu the Treasury funds, the balance being in enlarged circulation. The increase is thus distributed: Gold coin, $15,488,000; gold certificates, $45,160,000; silver certificates, $21,141,000; United States notes, $15,853,000; national bank notes, $45,044,000. The amount of silver dollars remains substantially unchanged, while the subsidiary silver increased nearly $3,500,000.

The *Tradesman* of Chattanooga, Tenn., presents an interesting table illustrating the industrial growth of the South for the second quarter of the year 1901. The table shows a number of new industries of all kinds established in eaeh of the 13 Southern States. The total of new industries for the first quarter of the year was 923, an increase of 205 over the first quarter of 1900. For the second quarter of 1901 a grand total of 1002 new industries is shown, being 79 more than in the first quarter of the year. The particular industries in which increases are most noticeable in the first half of this year are cotton and woolen mills, iron working plants, natural gas and oil companies, oil mills and refineries, and compresses and gins.

A comparison of the growth of our export trade with that of other nations of the world shows that the United States, iu the fiscal year just closed, has made by far the greatest increase. According to the figures of the Treasury Bureau of Statistics, the increase in exports from the United States during the past 12 months averaged about $9,000,000 per month; that of the United Kingdom and Russia $3,000,000 per month; that of Franee and Canada $2,000,000, and that of Austria-Hungary and Mexico $1,000,000, while Germany and Spain showed an average loss of $2,000,000 per month, and Belgium a loss of $1,000,000.

At a meeting of the Central Federated Labor Union in New York City on Sunday last, an attempt was made by the president of the Amalgamated Sheet Metal Workers' Association to persuade the union to adopt a resolution directed against the National Guard of the State. The resolution provided that no member of the regular army or navy, or of the State militia or naval reserves, would be eligible to membership in the union, and that any member of the union who became a member of the military or naval arm of the service should forthwith resign from the union. Provision, however, was made that this rule be suspended in time of war with a foreign foe. Fortuuately for its own reputation, the Ceutral Federated Union declined to adopt the resolution.

The State Department at Washington has received from the International Association for the Advancement of Commercial Instruction, the headquarters of which is in Brunswick, a programme for a meeting in the interests of this movement, which was to be held at Zurieh, Switzerland, July 11 to 13. The utility of an international association of this nature was to be discussed at this inaugural meeting, and all persous interested in matters of trade and commereial education are invited to become members. According to the prospectus of the association, the universal nature of trade makes it possible for the question of commercial education to be internationally treated in an advantageous manner, as the bases of trade, and trade requisites are essentially the same in all countries. It is proposed to publish an international statistical review in several languages, also to establish a central office where will be collected edueational plans of various countries, and where information will be given regarding the same to those interested in this subject.

Coal Production of 1900.

Official reports show that the year 1900 closed the century with the largest coal production ever recorded in the United States, and continued the supremacy of this eountry among the coal producing nations of the world. Practically complete returns to Edward W. Parker, statistician of the United States Geological Survey, show the total output of coal in 1900 to have been 267,542,444 short tons, an increase over the preceding year of 13,802,452 tons, or a little more than 5 per cent. The value of this product was $297,920,000, an increase of 16 per cent. over 1899. Coal producers felt a much greater benefit from the improved trade conditions in 1900 than in either 1898 or 1899. Coal contracts are usually made a long time ahead, sometimes more than a year, and much coal was delivered in 1899 at less than it cost to produce it, the price of labor having advanced before the operators could advance the price of coal. The value of the coal product in 1900 (the value being free on board cars at the mines) was equal to nearly one-third of the value of the total mineral product of the United States in 1899.

It is said that a sort of mineral ocher has been discovered in New Caledonia, which, when applied to the surface of iron, in the form of paint, will preserve iron work and prevent it from rusting. It contains about 65 per cent. of peroxide of iron, 6 of alumina, 6 of sesquioxide of chrome, besides proportions of cobalt, nickel, silica, chalk and magnesia.

LOVING CUP FOR EX-PRESIDENT BOAL.

At the quarterly meeting of the Western Association of Stove Manufacturers, held at the Auditorium in Chicago, on Tuesday, July 9, a very pleasing incident was the presentation of a loving cut to ex-President Stanhope Boal of the National Association of Stove Manufacturers. For some time past the members of the national body have been desirous of expressing in tangible form their high esteem for Mr. Boal, as well as their appreciation of his distinguished services during the period in which he presided over the deliberations of the National Association. A loving cup was decided to be most appropriate for the purpose and the matter was placed in the hands of Jeremiah Dwyer of Detroit, to whom subscriptions for the testimonial were forwarded from prac-

Loving Cup for Ex-President Boal.

tically every member of the National Association of Stove Manufacturers.

The cup, of which an illustration is presented herewith, was made by hand to order by Spaulding & Co., silversmiths, of Chicago, and is described by them as follows: The material is of silver 950-1000 fine. The design is in Greek lines and the workmanship is in *Marteté* or hand wrought. The decoration of the handles and the upper part of the cup consists of geranium leaves and flowers and the shield in which the inscriptions are etched is surrounded with beautifully wrought clover and clover leaves.

The inscription upon the face of the cup reads as follows: "Stanhope Boal, Fourteenth President National Association of Stove Manufacturers." Upon the second panel are the following words underneath the monogram of the National Association: "From the members, in grateful appreciation of his distinguished services from May, 1899, to May, 1901." On the third panel is the great seal of the State of Kentucky, in which Mr. Boal was born, and the very appropriate motto, "United We Stand, Divided We Fall."

In the absence of President Parlin of the National Association of Stove Manufacturers it devolved upon Frederic W. Gardner, as first vice-president of the association, to present the testimonial, which he did in the following words:

"On behalf of the National Association of Stove Manufacturers I have a word to say. It is a word of cheer and good will from its entire membership to a gentleman who has served them faithfully and well as their president for the past two years.

"The duties of this office are full of cares and responsibilities and are undertaken at all times with the sincere desire to show by every act and in every way a full appreciation of the high honor conferred upon the recipient.

"It must be a great satisfaction, at the end of the longest term of service granted its presidents, to know, when one has served to the best of his ability, that a feeling of gratitude exists. Such a feeling, as well as one of enduring affection, is expressed in the beautiful testimonial which I now ask former President Stanhope Boal to accept from the membership of the National Association of Stove Manufacturers."

While Mr. Boal was evidently taken by surprise at the beautiful gift of the members of the association, he responded to the speech of presentation in a happy vein and in appropriate terms:

Thinking that some of those who contributed to the testimonial might desire a picture of it, Mr. Dwyer forwarded to each subscriber a handsomely printed artists' proof of the cup, suitable for framing and hanging in their offices. The printing is on heavy calendered paper about 15 x 10 inches in size, and bears as a caption, "Testimonial to President Stanhope Boal from the Members of the National Association of Stove Manufacturers."

MEETING OF WESTERN STOVE MANUFACTURERS.

A regular quarterly meeting of the Western Association of Stove Manufacturers was held at the Auditorium Hotel, Chicago, on the 9th inst. A large representation of stove manufacturers was present from the district west of Pennsylvania and extending to the south of the Ohio River. The chair was occupied by President Joseph W. Emery of Quincy, Ill., and Thomas J. Hogan of Chicago was secretary. The feature of the meeting was the presentation of a beautiful silver loving cup to ex-President Stanhope Boal of the National Association of Stove Manufacturers, particulars of which are presented elsewhere in this issue.

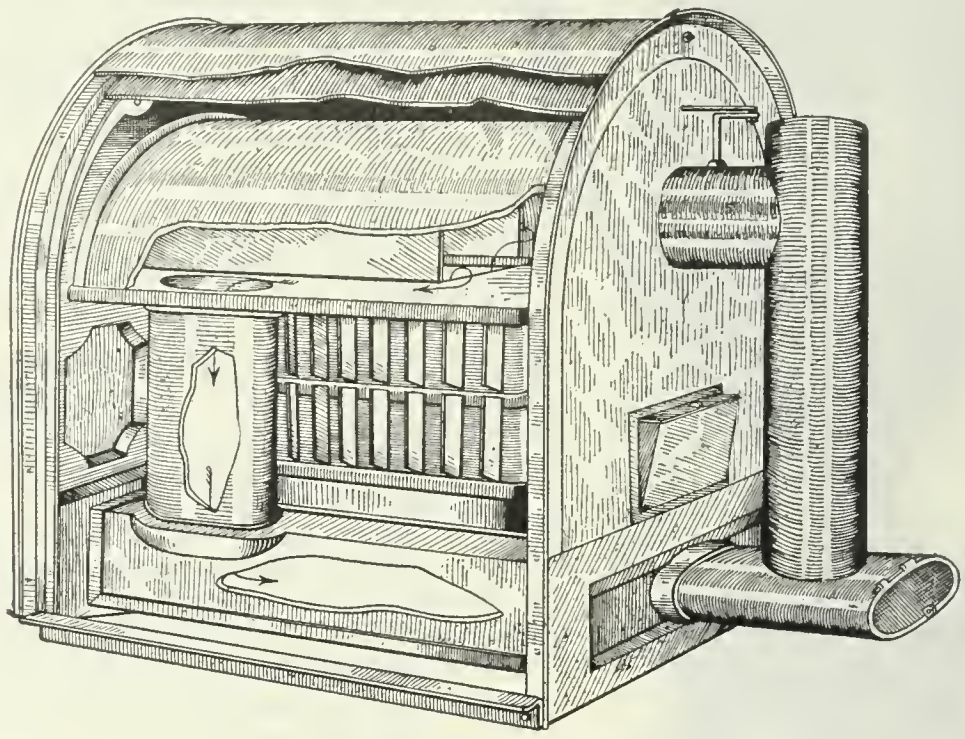
The manufacturers who were present discussed various trade questions. They took no action in regard to prices, and nothing now indicates any change in the direction of lower prices. All of them reported trade quite good. June business was much better than that of a year ago, when, it will be remembered, all branches of trade were seriously affected by the heavy reduction in wire products. Some of the manufacturers report their business double that of the corresponding time last year. Everything looks bright for the usual season's business, the outlook being very encouraging in most agricultural districts.

THE ECLIPSE STOVE MFG. COMPANY of Mansfield, Ohio, are sending to their friends in the trade cards calling attention to the fact that "the greatest eclipse of 1901 is the Lustrous Eclipso," a new hard coal Base Burner, which the manufacturers have just placed upon the market. It is a handsome construction, in the ornamentation of which nickel has been liberally employed. The manufacturers refer to it as "the latest, most unique, the most attractive, the best operating, and the most economical hard coal Base Burner and Double Heater on the market." The announcement is also made that at the Furniture Dealers' Convention, which will be held at Grand Rapids, Mich., the present month, all kinds of Eclipso Stoves and Ranges will be on exhibition. The company's representatives will be in attendance and will take pleasure in showing the goods to all who may be sufficiently interested to call at the store of the Wheeler Furniture Company, who are agents for the manufacturers.

MIDSUMMER MEETING OF THE NEW YORK STOVE ASSOCIATION.

It may seem gratuitous to suggest to the stove manufacturers who compose the New York City Stove, Range and Furnace Manufacturers' Association the advisability of making their next meeting a sort of holiday midsummer meeting at some one of the nearby seaside points. Without desiring to disclose any secrets, it must be pretty well known that while Vice-President Butcher has held the association in line during the absence of the president, the later meetings have been honored by the absence of many of the members, and in consequence the objects of the association have not received proper attention, nor have its edicts been as closely observed as would be beneficial to the whole trade, both wholesale and retail.

President Richardson is now at home and can add to his popularity by having the next meeting at one of the many popular points near New York, where a sea breeze will soothe, while some energy is expended by the members in discussing matters of general interest and importance. If the members were invited to pack a few things in a little grip and spend one night at some seaside hotel, it is probable that this feature of a meeting of the stove manufacturers would induce many to attend and develop a new interest in a work that should not be allowed to cease. A short business session, a good dinner, and a sociable evening spent in the exchange of views on various questions could not but prove attractive to the members.



The Brien Heater.

The Brien Heater.

The efficiency of a hot air furnace depends upon the arrangement of the heating surface so as to utilize the greatest percentage of the heat generated by the fuel, and to present as much surface as possible to the air passing through the furnace. These features are prominent in the Brien heater, made by the Brien heater Company, Hoosick Falls, N. Y., and shown herewith by means of a broken view. The heater is constructed entirely of cast iron in order to more readily withstand the ravages of time and the action of the products of combustion. It consists of a rectangular fire pot provided with a grate of the labor saving type, constructed to allow a free entrance of air to the fire chamber to support combustion. The fire pot has practically perpendicular sides, so that its surfaces are readily freed from ashes, and it is made with outside ribs extended in order to increase the heating surface presented. Above the fire pot is a substantial cast iron dome, affording an ample combustion chamber, and provided with two side flues. After the products of combustion rise from the fire they pass to the front of the heater through the two side flues and there drop down through connecting flues to the bottom flues, which run parallel with the sides of the ash pit and connect at the back, where there is an outlet into the smoke pipe. When starting a fire, a more direct draft can be secured by opening a damper. Another feature of the heater is that the fire pot and dome can be removed from the heater chamber by removing the cast iron front. This is pointed out to be a great convenience, whenever repairs become necessary, as there is no occasion to take down the hot air pipe and casings to get at the inner parts of the heater.

The heater is made in two sizes, having fire pots 15½ x 23½ and 18½ x 29½ inches. The heaters cased ready for the hot air pipes stand respectively 39 and 41 inches high. The smaller heater is rated to have capacity for heating from 7000 to 14,000 cubic feet of space, and the larger from 15,000 to 25,000. The heater has been sold throughout the colder sections of the United States, and the company report that the service has been of such a character as to substantially increase their trade. The company issue a 30-page catalogue devoted to the interests of these heaters, showing half tone engravings of many fine buildings in which they have been installed, and also a number of testimonial letters from satisfied customers.

Twentieth Century Range.

The Art Stove Company of Detroit, Mich., and with Chicago office at 79 to 83 South Jefferson street, are sending out a very neatly printed pamphlet of a size convenient to carry in the pocket, descriptive of what they are pleased to designate as "a truly Twentieth Century line of steel ranges." Attention is called to the fact that the line possesses not one but many improvements calculated to overcome the faults which have been found in steel ranges of the nineteenth century—principally the flue construction. Instead of being made with a sheet flue, the Twentieth Century ranges have two flues, the advantages of which are illustrated by means of colored engravings. The point is made that by means of the two flue construction the heat is evenly distributed, and as a consequence the oven bottom will not be so apt to warp or buckle. The new line of ranges are made of planished steel, which, in combination with richly carved and heavily nickel plated castings, renders them very attractive. All parts are made extra heavy and so constructed as to be unusually durable.

Some of the features are: Interchangeable reservoir,

large broiler door, draft slide, which when opened automatically opens the poker door; removable duplex grate and fire box, with hot blast fire back. The construction of the fire box is such that when burning soft coal there is comparatively little smoke and soot, while at the same time a considerable saving of fuel is claimed to be effected. The entire oven back consists of two thicknesses of steel with a thick layer of asbestos, thus retaining the heat in the oven instead of allowing it to radiate through the back, as is often the case in a sheet flue construction having a single thickness of steel and without asbestos. The oven back and the high closet are aluminized, giving them a light and neat appearance. The oven door is balanced, and the oven top is entirely covered with a cast iron grate filled with cement, which protects the steel and prevents the contents of the oven from burning on top. The front feed door falls to the level of the grate so as to admit large pieces of wood. The little pamphlet also shows the Twentieth Century Laurel parlor heater, made in 25 styles and sizes, and which is claimed to burn slack coal without smoke or soot.

Robinson Tubular Furnaces.

The Robinson Furnace Company, 107 and 109 Lake street, Chicago, have favored us with a copy of a new catalogue relative to Robinson's Tubular furnaces which they have just issued. The catalogue is a handsome publication, being not only the finest but the largest yet issued by this company. It comprises 64 pages. The headings and catch lines are printed in red, forming an attractive relief to the black letterpress.

First place in the catalogue is given to the type of furnaces distinctively known as the Robinson Tubular. These are full revertible flue furnaces, having radiators made with cast iron tops and bottoms, surrounded by vertical air flues, the whole being incased in a heavy sheet of refined steel in one piece. The vertical flues are the standard 3-inch, 4-inch and 5-inch wrought charcoal seamless boiler tubes, which are 24 inches long. Being exposed to the direct heat of the combustion chamber, the air passing through these tubes is highly heated. The smoke enters the pipe direct when the damper is open, but is forced entirely around the radiator when the damper is closed, thus making it a return flue radiator. These furnaces are made in five sizes, the series thus being available for all purposes, from small houses up to very large halls or churcehs. Full illustrated details are given relative to the various parts of these furnaces. Another style of Tubular furnace is made with the radiator construction entirely of cast iron, having no joints in the top. The radiator is corrugated, which adds greatly to the outer heating surface, while the flues are of heavy cast iron. The all cast Tubular furnaces are made in three sizes.

Another class of furnace is the Tubular Hot Blast, which is specially adapted to soft coal or wood. This furnace has a sectional gas ring arranged around the upper part of the fire pot for the admission of air, which becomes highly heated in its passage around the ring and then escapes into the fire pot through a large number of holes, thus causing more perfect combustion. This furnace has a stoel radiator and is made in four sizes. Another Hot Blast furnace is shown which is made entirely of cast iron and is furnished in three sizes.

The Robinson Reliable furnace, designed for either hard or soft coal, has a heavy steel radiator and an extra heavy dome, large at the bottom and drawn in at the top where the connection is made to the radiator bottom. This furnace is made in three sizes and is adapted to either hard or soft coal. The Robinson Tubular wood furnace, which is designed for wood exclusively, is a heavy serviceable furnace having a steel radiator and is furnished in two sizes. The Eclipse water heator is shown, by means of which any of the furnaces made by the company can be converted into combination hot air and hot water furnaces. A portion of the catalogue is devoted to hints on setting of furnaces, directions for making estimates and illustrations of furnace fittings. Numerous testimonials are also given.

Nickel Plate Stove Polishes.

The Nickel Plate Stove Polish Company, Chicago, are manufacturers of a variety of stove polishes and iron enamel, covering all the requirements of the stove and furnace trade. The stove polishes are made both in paste and liquid form. Their paste polishes are put up under the names of Black Jack, Black Eagle and Nickel Plate. These pastes keep moist and do not rust out. The liquid pastes are ready mixed preparations, which are put up in that form for those who prefer to have a stove polish ready for immediate use. Their iron enamel is put on the market under the name of Peerless and is adapted for use on stove pipes, grates, registers, coal hods, gasoline stoves, iron pipe, &c. It is ready for immediate use and dries quickly. The company have just brought out a handsomely illustrated catalogue containing colored reproductions of the packages in which each of these preparations is put up. A copy of this catalogue will be sent to any address on application. The company also state that they will send free samples of their stove polish by express, charges prepaid, to dealers who desire to test them.

ODD PLATES.

The Pittsburgh Stove & Range Company, successors to Bissell & Co., "who first made Stoves and other things in iron at Pittsburgh in the year 1829," have issued a neat folder carrying illustrations of some of the designs of Iron Linings which the company are making to complete their line of Peerless and Columbian Grates. The company state that they will issue a supplementary catalogue in the near future showing a new line of Grates, Iron Linings, Portable Baskets and Andirons, all designs being original, and were first modeled in clay by artists "whose hearts were in their work and whose taste and skill cannot be questioned."

The Kelsey Corrugated Warm Air Generator is the subject of an illustrated folder which is being distributed through the mail by the James Smart Mfg. Company, Limited, of Brockville, Ontario, who are Canadian agents for the Kelsey Furnace Company. In addition to an extended description of the Kelsey Generator, which is made in six sizes having capacities ranging from 5000 to 90,000 cubic feet, there are numerous halftone illustrations of buildings which are warmed and ventilated by means of it. There are also a number of testimonial letters from Canadian users, showing the satisfaction which the Generator gives wherever installed.

The Duquesne Mfg. Company, with principal office in the New Jersey Corporation Guarantee & Trust Company's Building, Camden, N. J., have been incorporated with a capital stock of $150,000 by Thomas Gunning, J. M. Arnold and M. J. Danin, to manufacture Stoves, Heaters, &c.

We have received from C. B. Halladay, manager of the Buffalo branch of the Thomas, Roberts, Stevenson Company, Philadelphia, a copy of a booklet which is being distributed with a double object in view. First, it is intended to call attention to a few of the many lines of goods which the company manufacture, and to invite the recipient to call at their Buffalo branch, located at 58 and 60 Broadway, and examine their line of Ranges, Furnaces, Gas Heating Stoves, Gas Ranges, &c. The second object of the little work is to give their customers and friends a fund of information regarding Buffalo and vicinity, and the Pan-American Exposition in particular, in as clear and correct a manner as is possible with a subject about which so much can be said. The company are sending out with the pamphlet a letter calling attention to their Buffalo branch, and stating that they will send a catalogue, describing their entire line of Stoves and Ranges, in case the dealer does not anticipate a visit to the city named.

Kennedy Brothers have about completed arrangements for the establishment of a Stove foundry at East Thomas, Ala.

As we go to press the midsummer meeting of the American Society of Heating and Ventilating Engineers

is being held at the Hotel Victoria, Chicago. Copies of papers which are to be read and discussed that have reached us are evidence that the meeting will not be without interest.

THE S. OBERMAYER FOUNDRY SUPPLY COMPANY, Cincinnati, Ohio; Chicago, Ill., and Larimer, Pa., have secured the contract for the entire equipment of the Etna Smelting & Refining Company's new plant, Cincinnati, Ohio, and among numerous other contracts one from the United States Government aggregating upward of $5700, for Seattle, Wash. The company's plant at Cincinnati was shut down for a brief period to make necessary repairs and for taking inventory; nevertheless it is expected that the month of July will be the banner month in the history of their business.

JACOB MYERS, father of William J. Myers and James Myers of the Union Stove Works, died at his residence in New York City, July 8, aged 73 years. The Stove trade will learn with regret of the loss sustained by these gentlemen and will join us in an expression of sympathy with them.

PETER B. ACKER, Union Stove Works, is enjoying a well earned vacation among the islands of the St. Lawrence River.

F. H. MOORE of the International Heater Company, Utica, N. Y., was a visitor at the company's New York office, 139 Water street, this week. In addition to a satisfactory trade for the season in their varied lines of Furnaces, Combination Heaters and Steam and Hot Water Boilers, Mr. Moore reports a growing trade for the Drake Acetylene Gas Generators, which the company are manufacturing.

J. M. LITCHFIELD, 105 Beekman street and 284 Pearl street, New York City, agent for the Mt. Penn Stove Works, Reading, Pa., is distributing, with the compliments of the manufacturers, a little notebook consisting of eight pages so treated with plastic slate as to be written upon by means of a slate pencil. The front cover is embossed in old gold upon a black ground, and carries the word "Notes," while the rear cover carries the inscription, "Compliments of Mt. Penn Stove Works, 105 Beekman street, New York City, J. M. Litchfield, agent."

THE ENTERPRISE STOVE COMPANY of Vincennes, Ind., are rapidly completing their new three-story building, which will be devoted exclusively to the production of Steel Ranges and Steel Cook Stoves. The structure covers an area of 30 x 100 feet, and the three floors will be used for stamping, mounting and finishing respectively. We understand that this new line of Steel Ranges and Cooks will possess many interesting features of construction.

SOME time since attention was called in these columns to the growing scarcity of steel, or rather to the difficulty of manufacturers in securing the necessary steel for making their Ranges. The situation has now assumed such a phase that the Schneider & Trenkamp Company of Cleveland, Ohio, announce that owing to their inability to procure the steel necessary in the construction of the Junior Gasoline Stoves, they will, until further notice, be unable to accept any orders for this class of goods. All orders for Stoves other than Juniors will, however, be received and have prompt attention as heretofore.

GURNEY & Co. of Boston, Mass., are sending out cards carrying an illustration of their Silver King Range, which is offered in two sizes. When the Stove is all black it is called the Iron King. It has been brought out in such shape that dealers can nickel their own Ranges. The price of each piece of nickel is fixed, and the dealer puts on the nickel to suit the customer. When the Range is full nickel plated it is called the Silver King. This scheme, we understand, has met with considerable success and has proved popular with the trade. The company state that they have introduced the idea to meet the requirements of those who desire plain Stoves, but who, after purchasing, want them nickeled, so they add a piece at a time.

WE have received a sample of the Felt Mats which are being furnished by the Michigan Stove Company, Detroit, Mich., to their agents, to be used for advertising purposes. The Mats are about 11 inches square and ⅛ inch thick and are well calculated to delight the heart of the housekeeper. They are ornamental in appearance, having the Garland trade-mark stamped in colors on one side.

THE CHARTER OAK STOVE & RANGE COMPANY, St. Louis, Mo., have issued catalogue D, giving a full description of their Charter Oak Furnaces. These Furnaces are made both with steel radiator and with cast radiator in three sizes. The catalogue, which contains a special price-list, will be sent to any dealer on application. The prices on these Furnaces are such as to be attractive to the trade. The Furnaces are illustrated in the company's full page advertisement, which appears in another part of this issue.

THE new foundry building of the Mountain City Stove & Mfg. Company, at the corner of Boice and White streets, Chattanooga, Tenn., was completed on July 2 and the work of installing the machinery is now in progress.

ANNUAL MEETING OF THE VULCAN CLUB.

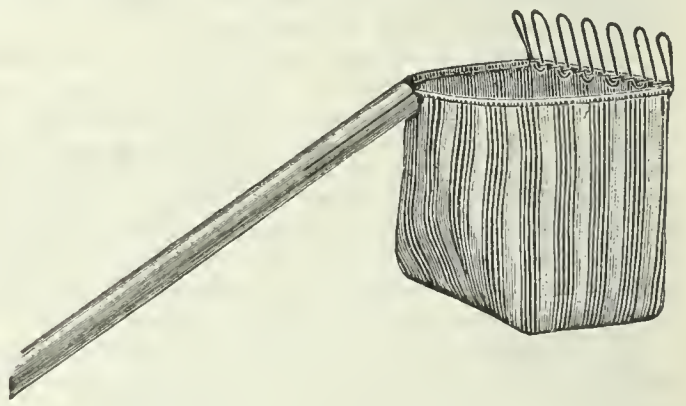
The second annual meeting of the Cleveland Furnace Dealers' Association (Vulcan Club) was held on the evening of June 27 in their club rooms in the Chamber of Commerce, Cleveland, Ohio. Reports were presented by the Auditing Committee, the secretary and the treasurer, which showed the club to be in a highly prosperous condition, with a comfortable cash surplus, notwithstanding the drain on the treasury of a three days' excursion to the Pan-American Exposition at Buffalo.

The election of officers to serve during the ensuing year resulted as follows: President, G. N. Bennett of the Bennett Furnace Company; vice-president, C. R. Holmes of the Holmes Furnace & Stove Company; secretary, E. F. Dettlebach of the Dettlebach Plumbing & Heating Company. The two last named were elected to their respective offices for the third time. These four officers, together with the retiring president, H. A. Smith, and J. C. Harrison, comprise the Board of Directors. G. G. Brown was elected sergeant-at-arms. Warehouse, Entertainment, Auditing and Legislative committees were appointed to serve during the year.

The club has renewed its lease of its present quarters in the Chamber of Commerce for another year. No increase in membership was reported during the past year, but a strengthening of tone was very apparent. The initiation fee has been raised from a purely nominal sum to a substantial amount, the club feeling that it is no longer necessary to offer bargain rates.

The Eclipse Fruit Picker.

The accompanying cut represents a fruit picker offered by D. B. Rock, Fairfield, Pa. The frame of the picker is made of one piece of number 9 tinned wire with



The Eclipse Fruit Picker.

loops or fingers at the top of the sack. The ends of the wire extend down on the handle and are secured in place by four staples. The sack is of bed ticking. The handle is 4 feet long. The picker is designed for gathering apples, peaches, pears, &c., and by its aid, it is remarked, the most delicate fruit can be handled without the slightest bruise. The device is referred to as neat, strong and durable, and as being comparatively low in price.

The M. & M. Combination Staple Puller and Fencing Pliers.

The Maxson & Maxson Company, West Edmeston, N. Y., are offering the combined staple puller, wire cutter, wire splicer, wire tightener, &c., shown in the accompanying cuts. The tool is forged from crucible tool steel, and is warranted against defects in material, temper or construction. The manner of pulling a staple is illustrated in Fig. 1. The jaws are so shaped, it is explained, as to easily grapple into the loops of staples,

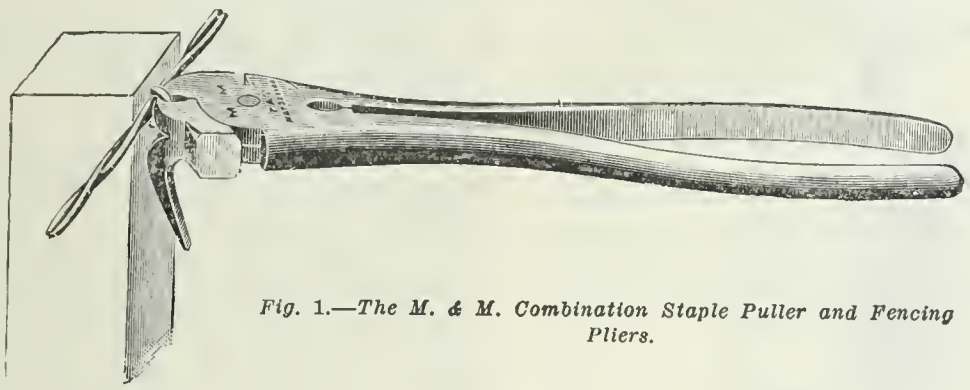


Fig. 1.—The M. & M. Combination Staple Puller and Fencing Pliers.

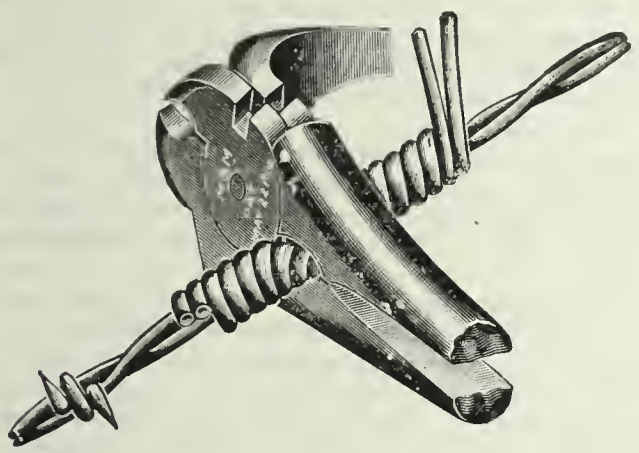


Fig. 2.—Wire Splicer.

and when the jaws are shut into the loop they force it well back from the points of the pliers in a strong portion of the jaws. It is pointed out that when drawing a staple the fulcrum is first at the upper portion of the horn, as shown in Fig. 1, where a powerful leverage is obtained, and as the staple is drawn and offers less

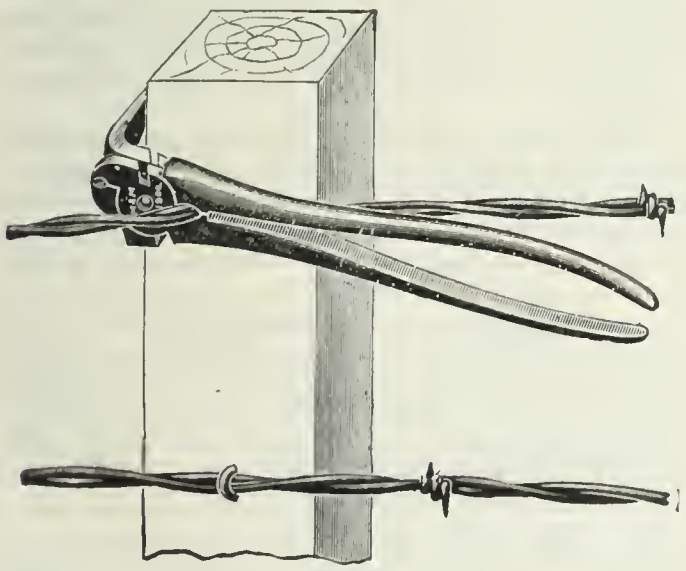


Fig. 3.—Wire Tightener.

resistance, the fulcrum point constantly moves further from the staple, and the staple is drawn without being bent, twisted or otherwise injured and may be saved for further use. To splice a wire the ends are placed in the splicing grip from opposite directions, when the grips are closed tightly, and the ends of the wire are wound around the main wires, as shown in Fig. 2. In Fig. 3 the process of tightening a wire is shown. The wire is grasped in the splicer grip and the horn is hooked on the side of the post. The handles of the pliers are then brought to the left around the end of the horn as a fulcrum, which strains the wire and brings the tool out of the way so a staple may be driven. The pliers may also be used as a wire cutter, a nail puller and a hammer.

Chicago High Speed Rotary Washer.

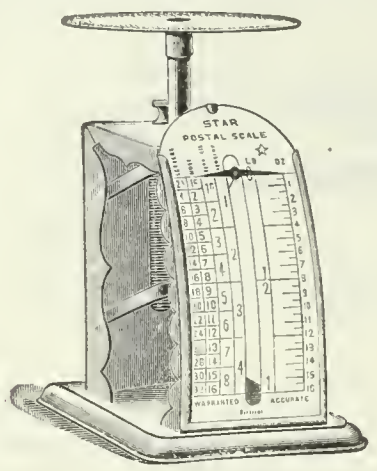
The New Century Washing Machine Company, 6 and 8 Wabash avenue, Chicago, Ill., are manufacturing the washer herewith illustrated. The machine is referred to as a high speed rotary washer, the cover of which is perfectly balanced by the fly wheel. The fly wheel

Chicago High Speed Rotary Washer.

may be turned backward or forward, doing, it is stated, excellent work both ways. The machine is devoid of clutches or springs, and, it is remarked, is light running, noiseless, and can be operated by a 10 year old child. The gearing is covered and the legs are bolted to the machine. The tub is made of white pine, with corrugated sides and bottom. Heavy steel hoops are placed at the top and bottom, and a heavy electrically welded wire in the center. The washer has a space for an 11-inch wringer, also a large opening for handling clothes

The Star Postal Scale.

The cut herewith shown is of a postal scale offered by the Pelouze Scale & Mfg. Company, Chicago, Ill. The scale is being made with a new frame, which is referred to as a great improvement over the old pattern. The scale weighs up to 1 pound by ½ ounces, and also gives the cost in cents of the amount of postage required for letters, books, merchandise and newspapers. The scale is 3 inches high, 2 inches wide and 3 inches deep, and is designed for ladies' or gentlemen's desks. The scales are furnished in nickel plate and oxidized copper.



The Star Postal Scale.

Cost of Doing Business.

The following communication from a Nebraska merchant in reply to an inquiry in a recent issue in regard to the cost of doing business will be interesting, as giving some details on the subject:

In your issue of June 1 I notice an article on the cost of doing business. Your contributor seems to be guessing in what he says. I wish to submit a few facts from my experience. I am a small average hardware dealer and have kept an accurate account of my business. I have an average of $3000 worth of stock and $2000 invested in a building in which to transact business, making a total capital employed of $5000. The sales for the year were $11,706.25; freight and drayage, $438.95; insurance on stock and building, lighting and all other expense items were $310.05, aggregating an actual expense of $749. I also figure an additional expense of 5 per cent. on building plus $15 a week for myself (this may be a little over), making an addition of, say, $850 to the $749, or a total of $1600 cost to sell $11,706.25 worth of merchandise, equivalent to about 14 per cent. I don't think there should be added any percentage on stock to the expense account, for the reason that all above the actual expense to sell the goods goes as interest on money invested in stock. I do not keep a clerk, but if I did his wages should be charged to expense account. The more business a man does to a certain extent the less percentage of expense, and if this clerk did not sell enough more goods, when I made up the expense account and ascertained the fact, he should not be kept. As the first writer has said, there are too many who do not allow enough for the expense account. There is a farming class who go into business and generally make a failure of it, as they figure on a 10 per cent. profit and calculate on no expense.

HARDY GREENWOOD, San Antonio, Texas, who is conducting a brokerage business in Iron, Steel and Hardware, acting as resident salesman on commission for manufacturers for whose products there is a demand in that city, is desirous of obtaining a few other accounts in addition to those he is now working. Among the lines for which he is looking are Tank and Stack Sheets, Tinware, Galvanized Ware, Hollow Ware, Wagon Material, Corrugated Roofing and Carriage Malleables. Some of the manufacturers for whom Mr. Greenwood is now acting are the Kansas City Bolt & Nut Company, Dillon-Griswold Wire Company, Diamond State Steel Company and Harrisburg Pipe & Pipe Bending Company.

Stove and Hardware Dealers.

J. F. BERNER, wholesale and retail dealer in Hardware, House Furnishing Goods, &c., 515 William street, Buffalo, N. Y., advises us that he will be pleased to extend any assistance that he can in the way of securing accommodations, &c., to his brother Hardware merchants who visit that city during the Pan-American Exposition now in progress.

WOOD & RAY, Hardware, Stove and Agricultural Implement merchants, Tyler, Texas, have dissolved by mutual consent, Mr. Ray retiring. G. B. Wood continues under his own name.

S. M. DAVIS has lately succeeded McBride & McIntosh, dealers in Hardware, Stoves, Tinware, Paints, Oils, &c., Covina, Cal.

W. J. GALLUP and Geo. Bowers, under the firm name of Gallup & Bowers, have lately entered the Hardware business in Sparta, Minn. Besides a line of Shelf Hardware they are carrying Stoves, Harness, Sporting Goods, Mining and Lumbering Supplies, Paints, Oils, &c.

WILLIAM O'BRIANT of Dublin, Texas, has bought out the Shelf Hardware, Tinware and Stove stock of J. F. Miller, Walnut Springs, Texas, and will continue at the old stand.

WOODS & BOYLE have succeeded Chevis & Woods in the Hardware, Stove, Agricultural Implement, Sporting Goods, Harness and Buggy business in Holton, Kan.

A 12-PAGE PAMPHLET has been gotten out by Chester D. Clapp of Toledo, Ohio, containing nearly 30 advertisements relating to Steel Ranges. The advertisements are nearly all original and have been used with success in Mr. Clapp's business.

THE LALANCE & GROSJEAN MFG. COMPANY, 19 Cliff street, New York, report an extraordinarily heavy demand for their Agate Nickel Steel Ware. The call for this high grade of Enameled Ware is heavier than ever before in the history of their business, and each recent month has shown an increase in the sales of these goods over those of the previous month. The company's factory at Woodhaven, L. I., is running full night and day, in order to keep pace with their trade. Consumers, this year, have shown a more marked inclination than ever before to buy the better and more expensive classes of Enameled Ware. The demand for the cheaper grades of this ware is also quite active, but it has not grown in correspondence with that for the higher grades.

THE occasion of moving into a new store building was utilized by the Poundstone-Refior Hardware Company of Ottawa, Ill., by issuing a well printed 12-page circular 9 x 12 inches in size to their trade. It was principally devoted to illustrations and descriptions of Hardware, Stoves, Ranges, Agricultural Implements, Carriages, Sporting Goods, &c. On the first page a view of the new building and portraits of Messrs. Poundstone and Refior were presented. Two pages and part of a third were devoted to a sketch of their "new home" and its different departments.

THE PARKER WIRE GOODS COMPANY of Worcester, Mass., have lately been organized for the purpose of manufacturing a line of Bright Wire Goods, Coat and Hat Hooks and Special Wire Goods. The company are a Massachusetts corporation with a capital stock of $10,000, all of which has been paid in. A. H. Parker, president and treasurer, has a thorough knowledge of the Wire Goods business and a large acquaintance with the trade, having been for the past 12 years connected with the Wire Goods Company of the same city in the capacity of salesman and general sales agent. The company will start manufacturing goods in a moderate way and increase as the business demands.

The experiment of driving a dynamo with power generated by a wind mill is said to have proved entirely satisfactory at Wittkiel, a village near Hamburg, Germany. The wind mill has a diameter of 39 feet with a wind surface of 526 square feet, and it drives a dynamo which furnishes a current of 120 amperes at 160 volts, when the speed of the wind exceeds 9 feet per second. The dynamo is also employed to charge the accumulators, which furnish a current of 110 volts used in lighting the town and driving a number of small motors.

THE SMOKE TEST FOR PLUMBING.

It is but a short time ago that the smoke test for detecting leaks in plumbing systems was spoken of only by the older and better informed plumbers. The apparatus and its application were alike unknown to many in the trade. Gunster & Forsyth of Scranton, Pa., have done not a little to bring this convenient method of testing plumbing systems before the trade in exploiting the Thomson smoke machine, which they manufacture and sell. The machine is intended to burn tarred paper, oily waste or any other similar material under slow combustion, so as to make a dense smoke. Then, by operating a lever, the smoke is slightly compressed, which forces it through a hose into either the fresh air inlet at the ground or the vent pipe at the top of the building, when all the other openings are closed. By continuing the operation of the compressor the smoke is forced all through the waste, soil and vent pipes of the plumbing system, and if there are any cracks, breaks or leaks the pungent odor of the smoke betrays the leaks, which are readily located, as the smoke can be seen issuing from the defect when search is made.

Many plumbers make a specialty of applying the smoke test to the plumbing in the buildings of their customers, particularly during the season when the families are away, so that they can test for leaks and make any repairs that may be neeessary. One of the advantageous features of the smoke test, however, is that it can be readily made when the family is occupying the house without interfering with their use of it. The greater interest taken in sanitary precautions makes it far easier for the plumber to secure the opportunity of testing the plumbing and put it in order than would have been possible a few years since. The possession of a smoke test machine and the intelligent use of it has brought many enterprising plumbers a large and profitable business, both in repairing and in new work.

COOLING DRINKING WATER.

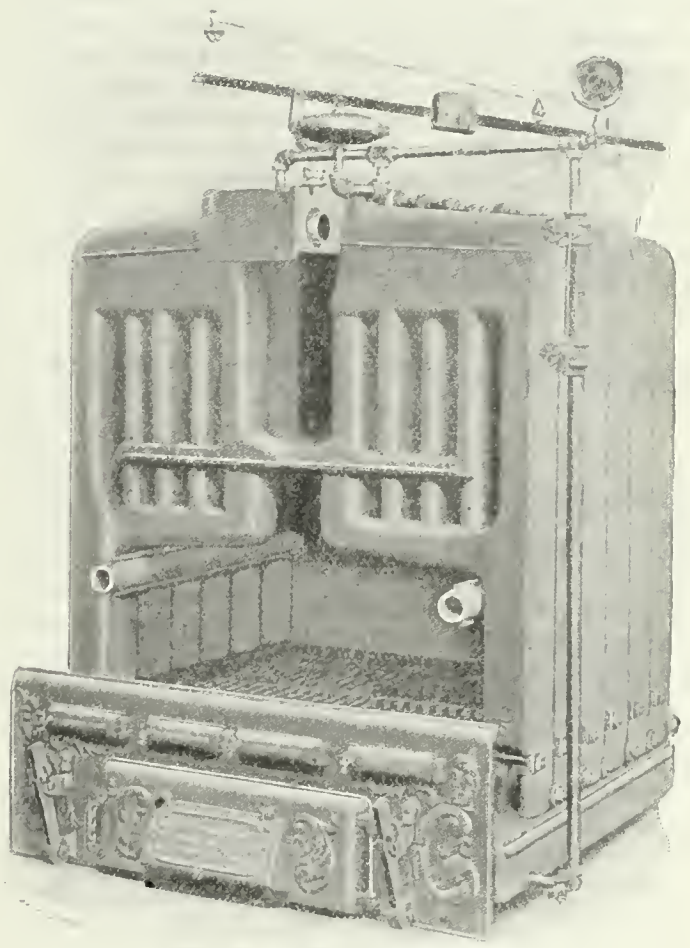
The question of cooling drinking water is no small one to those who run restaurants in large cities and hotels. Substantial assistance in the solution of this problem has been provided in the tin lined iron pipe made by Lamb & Ritchie of Cambridge, Mass. By means of a special process they clean the inside of iron pipe and thoroughly tin the surface, but not in the ordinary sense, for a quantity of tin is deposited which is almost as thick as the iron pipe itself. All are aware that tin has nothing in its composition to detract from the purity of drinking water, but that it will allow absolutely pure water to flow through it without any form of contamination. This makes a tin lined iron pipe admirably suited for being manufactured into coils to be placed either on the bottom or around the sides of tanks or vaults in which ice can be stored. The water, not coming in contact with the ice, is not contaminated with any impurities that the ice might contain, and having to flow through long pipes immersed in cold tanks, it is cooled to a very agreeable temperature for drinking. The firm make suitable fittings, also tin lined, for connecting pipes or for making coils.

The Ridgway & Tyler Company.

The corporation conducting a plumbing and heating business at 513 Union street, Schenectady, N. Y., under the name of the Harbison Plumbing & Heating Company, have, by consent of the court, changed their corporate name to the Ridgway & Tyler Company and will continue the business under this name at the same location but with new and improved facilities for conducting the same. Frank I. Mesick, who for the past 24 years has been engaged in the business and is now acting as sanitary engineer for Ridgway & Tyler at Albany, N. Y., will have special direction of the department of construction of plumbing and sanitation. Henry W. Blair, who is at present in charge of the heating and ventilation department, for the past 20 years has been engaged with the J. F. Pease Furnace Company of Syracuse, N. Y., and is thoroughly qualified in all branches of his work. He will have personal direction and supervision of all work planned and erected. John E. Harbison, formerly connected with the Harbison Plumbing & Heating Company, is no longer interested in the corporation, either directly or indirectly.

HENDERSON THERMO STEAM HEATER.

The accompanying engraving shows the Henderson Thermo Steam Heater, manufactured by the Prizer-Painter Stove & Heater Company, Reading, Pa. The general construction is the same as in the Henderson Thermo water heater and steam requirements are met by changes in the sections. In both heaters the sections are divided in the middle and extend only half way across the heater. This insures freedom to expand and greatly reduces the liability of breakage. Each section is connected to a top header and to a water base. The sections



Henderson Thermo Steam Heater.

are not connected to each other and any one may be easily removed without disturbing any other part of the heater. This is urged as a great advantage over sections which extend clear across the heater and are connected to each other. The connections are slip nipples of malleable iron, the castings being drawn together over the nipples by short bolts outside the waterways and away from the fire. These joints are easy to tighten, easy to take apart and durable. The top header is sunk between the upper ends of the sections and the sections connect to the sides of the water base. For convenience in handling and to insure freedom from breakage the base is made in three castings, two sides and a back, connected by 5-inch slip nipples.

The grate is of the rocking and dumping type, the number of grate bars corresponding to the number of heater sections. Three widths of the heater are made in which the grates are 19, 28 and 41 inches wide. The 41-inch grate is divided into two parts which are operated separately. By means of a pawl the rocking is limited to the movement necessary for ordinary shaking, but by turning the pawl the bars may be turned upright, and the contents of the grate dumped into the ashpit.

The engraving shows the heater without the front section. The intermediate section has three horizontal

waterways and the middle one forms the crown sheet. After striking the crown sheet the draft passes up through the vertical flues at the outside of the heater, then travels laterally between the tubes to the large central flue and then back to the smoke pipe. The tubes above the crown sheet are staggered so that the gases must follow a zigzag route, while they strike the heating surface at right angles. The proportion of fire surface, flue space and grate area is exactly the same in all sizes of the heater. From front to rear of the heater the tubes are in straight rows, and all surfaces are easily reached with a cleaning brush.

The upper part of each steam section is a liberating chamber, the water line being carried at about the middle of the gauge glass. An independent circulation of water takes place within each section and this is facilitated by diaphragms in the outer water legs which provide separate passages for ascending and descending currents. A special feature is shown in the horizontal tubes inside the fire pot. These connect with openings in the front of the heater and bring in air which is heated in the tubes and discharged into the combustion chamber. It mingles with the burning gases and furnishes the oxygen which they require for thorough combustion, burning gases which would otherwise pass unburned to the chimney. The Manufacturers' Catalogue No. 4, just issued, not only describes in detail the Henderson Thermo steam and water heaters and shows many fine engravings, but is a book which should be read by every heating contractor for its suggestions and general information.

THATCHER STEAM AND HOT WATER HEATERS.

Printed in black on a two-shade effect in green, the Thatcher Furnace Company, 240 Water street, New York, are sending to the heating trade a 32-page catalogue devoted to the Thatcher steam and hot water heaters. The introduction calls attention to the long experience of the house in manufacturing high grade heating apparatus, and to the extension of their plant and its equipment with all the necessary appliances for manufacturing high grade steam and hot water heaters. A page is devoted to the company's terms and to suggestions for ordering goods. The opening portion of the catalogue is occupied by the Thatcher sectional steam and hot water heaters. These heaters are of the vertical sectional return flue type. The sections are connected by means of manifolds with screw joints outside of the heater, so that they are readily accessible but not subject to the action of the fire. The arrangement of the waterways is such as to facilitate circulation and to present a large surface to the direct effect of the fire. These heaters are made in 12 different sizes rated to carry from 650 to 4040 square feet of direct steam radiation.

The next heater shown is a new production which is called the Comfort, owing to its qualifications to provide a satisfactory temperature in residences. This heater is of round form, with a large combustion chamber into which a series of lobes or projections extend with the object of bringing a larger amount of heating surface where the full effect of the fire will be upon it, thus increasing the efficiency and economy of the heater. It consists of an ash pit and fire pot and combustion chamber and upper section, so that it is readily handled, and it is made with grates 24 and 28 inches in diameter. The capacity varies from 550 to 975 square feet of steam radiation, according to the number of upper sections that are used in the heater.

The Empire heater, which is well known to the trade, is also shown by means of broken views, and its merits attractively presented in the text, while tables give the ratings for both steam and hot water. The Champion steam and hot water heater, which combines the merits of the vertical sectional and the horizontal tubular constructions, is also displayed by means of broken views, the text and details showing that it is well adapted for large work. The Sterling tank heater and laundry stove occupy two pages, and another page is devoted to the Thatcher combination hot air and hot water heater, which is made in six sizes and well adapted for fine residence work. An engraving shows a horizontal hot water heater suspended from the ceiling and connected with a Sterling hot water heater for summer use, and also connected with a rear section of a Thatcher steam heater for winter use. By this means the labor and fuel for an extra water heating apparatus are avoided during the winter season. The last three pages contain useful information on apportioning radiation and determining the size of both steam and hot water heating apparatus.

New Pipe Mills.

The S. R. Smythe Company, engineers and contractors, Park Building, Pittsburgh, are building at the present time no less than eight independent pipe and tube mills in different parts of the country. These new mills, with the daily capacity of each, are as follows:

	Tons.
Eastern Tube Company, Zanesville, Ohio	500
Wheeling Steel & Iron Company, Benwood, W. Va	400
Coatesville Rolling Mill Company, Coatesville, Pa	60
United States Tube Company, Buffalo, N. Y	60
Carnegie Tube Company, Carnegie, Pa	50
Longmead Iron Company, Conshohocken, Pa	50
Alabama Tube & Iron Company, Birmingham, Ala	50
The Aermotor Company, Chicago Heights	90

In addition to the above the Youngstown Iron Sheet & Tube Company are building large mills at Youngstown, Ohio, to roll iron tubes, and will have a capacity of about 300 tons a day. The La Belle Iron Works at Steubenville, Ohio, are building new steel pipe mills and will turn out from 200 to 250 tons per day. These independent mills will therefore have a daily capacity of close to 2000 tons of pipes and tubes.

The Heating, Ventilating & Foundry Company.

The Heating, Ventilating & Foundry Company of Pittsburgh have just completed the erection and equipment of a new and model foundry and machine shop at Lazearville, W. Va. The main building is 65 x 145 feet, and is arranged on the continuous plan. A private siding on railroad switch runs along the full length of the building. The raw material, such as iron, coke, &c., is unloaded from cars onto a platform and into sheds, surrounding the cupola, which has a melting capacity of 5 tons per hour. This cupola is located on the side of a molding room, and is equipped with all the latest improvements in cupola practice. Directly in front of the cupola and about 25 feet distant is situated a 2-ton jib crane, for handling large ladles of iron and heavy castings. After the castings are made they pass into the tumbler and emery room, adjoining the molding room, where they are cleaned and ground, and if the castings require machine work, they pass into the machine shop, and then into the store or ware room. In case no machine work is necessary the castings pass directly into the storage room, from where they are loaded into cars, ready to ship. There is no rehandling of either the raw material or the manufactured goods. The power used for running the blower for cupola blast, elevator, cleaning barrels, emery wheels, drill presses, lathes, planers, &c., is furnished by two 25 horse-power gas engines, which are so arranged that they can be run separately or together. The whole plant will be heated and ventilated by what is known as a mechanical furnace system, consisting of large horizontal furnaces, made by the company, for heating and blowers for circulating the air, both for winter and summer. The offices consist of four rooms, two rooms on the ground floor and two above. These offices are heated and ventilated by a fire place system, with apparatus made and controlled by the company. The product will be about 5 to 10 tons per day, and will be increased as fast as possible.

PEDEN & Co., 207 Main street, Houston, Texas, are adding to their stock a full line of Steam Fitters' Tools, Supplies, Packing, Belting, &c., and will be pleased to receive catalogues and quotations from the manufacturers of such goods.

New York City Notes.

The trade sympathizes with President I. J. Brown of the New York City Association for the loss he has sustained in the death of his father, which occurred last week, at the ripe age of 89 years.

* * *

The annual outing of the Manhattan Branch will take place at Bayside, L. I., on Wednesday, July 24. The programme of sports includes baseball, shooting, fishing and swimming matches for valuable prizes. Tickets can be obtained from John Renehan, 163 East Thirty-fifth street, the treasurer, or from any other member of the committee.

* * *

The labor question has not been settled yet and strikes are occurring, on jobs where a hold can be gotten, to settle the supremacy of the warring factions of journeymen. No final settlement is yet in sight.

* * *

Trade still continues quiet, although there are many jobs given out which are not ready for the plumbers yet.

* * *

Milton Schnaier is doing the plumbing in the Towers Apartment House at the southeast corner of Riverside Drive and Eighty-fourth street. This is one of the finest apartments in that vicinity, rents running from $2000 to $10,000 a year.

* * *

One of the best jobs in the city is the Mount Sinai Hospital, which is to occupy the block between 100th and 101st streets and Fifth and Madison avenues. Bids are now in the hands of the Building Committee and there is considerable speculation as to who will be the lucky man.

Trenton Potteries Company.

The Trenton Potteries Company of Trenton, N. J., have an exhibit of their wares at the Pan-American Exposition, at Buffalo, which is located in the Liberal Arts Building, Department of Sanitation, where they are distributing a pamphlet showing on the outside one of their elliptical lavatories, made from solid porcelain. The pamphlet contains a list of the jobbers in the United States, Canada, Great Britain and Australia who handle their wares, and the Pottery Company refer all visitors and inquiries for information regarding the price of their wares and the cost of installation of them to the nearest jobber in the locality from which the visitor comes. The list of jobbers in the United States is practically a reprint of the pamphlet issued by the Confederated Supply Association, and is the official list of the legitimate jobbers of plumbing supplies in the United States. The list of jobbers in Canada is a very complete one, and is made up from the firms who are direct customers of the Trenton Potteries Company. The sanitary earthenware manufactured by the Trenton Potteries Company is not excelled by the product of any pottery, foreign or domestic. The finest sanitary wares are now produced in the United States. The product is not only superior in durability and finish, but the sanitary devices and appliances made here are far in advance of any foreign goods now on the market.

Water Heaters for Summer Use.

There is no time of the year when the instantaneous water heater is a greater convenience to the owner than during the summer, when the family are away from home. It is often the case that a few occupants use the house for sleeping purposes, and when they find the bathroom without a hot water supply it is devoid of one of its greatest conveniences. W. J. Adam of Joliet, Ill., has produced in the Victor Instantaneous Water Heater a device which is intended to overcome this difficulty. Being adapted for the use of gas as a fuel, it is a simple matter to turn on the gas and have the water heating begin at once. The capacity of the apparatus depends on the temperature of the water desired. Ordinarily, it will heat the water to a suitable temperature for bathing as fast as it will run from the faucet through the water heating coils.

The convenience of such an apparatus suggests that plumbers, stove dealers and hardware men would add profitably to their business by displaying a water heater and explaining its uses. In fact, it has been pointed out by those who have done a successful business in water heaters that it is not a seasonable article, but is as well adapted for sale and use in the winter season as in the summer. This is particularly true in houses which have their heat supplied from street mains, or in which a caretaker keeps up the fire in the heating apparatus. In the absence of the fire in the kitchen, with the gas instantaneous water heater, hot water may be secured for a bath in a very few minutes.

Heating and Plumbing Notes.

"Trenchant Truths" is the title appearing upon a little folder that is being sent out to the trade by the Berger Mfg. Company, Canton, Ohio. The inside of the folder bears in typewritten lettering an ingenious and convincing plea for the use of the company's Twentieth Century Corrugated Steel Pumps. It is claimed that a dealer can do more business, a better business, make more money and make it faster with these Pumps than with other goods of the kind.

In the interest of the Drake Automatic Acetylene Generator the International Heater Company of Utica, N. Y., are sending to the trade a letter received from Captain Mercer, acting agent for the new Department of Indian Affairs at Leech Lake Agency, where the Indian School buildings are illuminated by a Drake Automatic Acetylene Gas Generator. The Captain's letter says the Generator has given entire satisfaction and that the light is very fine.

Frank D. Ellison, plumber, is now located in his new quarters at 706 Main street, Hartford, Conn.

J. W. Hunt & Co., Providence, R. I., have contracts for the plumbing and heating of 22 houses, in which they will use Glenwood Boilers.

I. Seymour Crane, Montclair, N. J., bid $5467 and secured the contract for the plumbing and sanitary improvements for the east wing of the Montclair Penitentiary.

Thomas Logan, a master plumber, and J. S. Mallett, a journeyman plumber, have been appointed on the Board of Plumbing Examiners of Bridgeport, Conn.

Frank L. Avery has been elected plumbing inspector by the Board of Health of Holyoke, Mass., to replace Joseph Murray, who resigned some weeks ago. The office carries a salary of $1100.

President Meredith of the Canadian Association of Master Plumbers in his report at the recent Toronto convention made the following recommendation: "Let us educate our members to rather endeavor to do first-class work at a fair price than to contract at such a price that scamp work is the result." It is advice that can be followed with advantage.

The Central Supply Company, recently organized as a corporation under the laws of Massachusetts, have opened a large store at 35 and 37 Waldo street, Worcester, Mass. The new concern will deal in Steam, Gas, and Water Supplies and contract for steam heating and power plants. The store is about 40 x 60 feet, with a large storeroom under the Waldo House. The officers of the company are: President, Ira P. Smith; treasurer and manager, J. P. Ashley; directors, Ira P. Smith, C. L. Waite, J. P. Ashley. The men in charge of the business have long experience, excellent facilities for displaying their goods and fine equipment for constructing steam heating and power plants.

A plumber of Richmond, Va., who had trouble with his men who went on a strike, has sold all of his plumbing contracts to a Western firm, who have taken their men to Richmond and are now completing the work. The striking plumbers refuse to submit the question at

issue to the International Executive Board, which induced the sale of the contracts.

In announcing the incorporation of the Locke & Smith Company of 103 and 105 West Thirty-seventh street, New York City, an error was made in naming the directors, who are: H. M. Smith, William E. Lawton and Albert J. Pearson.

L. L. Bassett, artesian well driller of New Haven, Conn., who has successfully completed two wells for the Y. M. C. A., has just taken the contract for sinking four more wells at the new building on Temple street, that city.

D. R. Sperry & Co., Batavia, Ill., are sending to the trade a seasonable circular devoted to their Lead Melting Furnaces. It is the time of year when large gas and water mains, as well as drainage systems, are being laid and large quantities of lead are used for calking the joints. One of the furnaces is mounted on wheels so as to be readily moved, and has a capacity of 750 pounds of molten lead. It is made of boiler steel having a cast iron fire pot, and the smoke pipe is securely connected with the shell. The Furnace is also made without the wheels, but provided with heavy loops to enable the Furnace to be carried by meaus of poles. Special cast iron Ladles adapted to the use of pipe layers are also shown.

The Pierce, Butler & Pierce Mfg. Company of Syracuse, N. Y., are sending to the trade a 16-page catalogue devoted to the Pierce Vertical Vent Closet. The catalogue is illustrated with half-tone engravings showing siphon jet closets with both high and low down flush tanks and their special vertical vent. The vent is shown to be of larger bore than heretofore used for local vent purposes and special stress is laid on the fact that the outlet or vent rises immediately in connection with the closet, inducing an up draft for ventilating purposes. It is also claimed that the location of the vent makes it impossible to become clogged or overflow. To those who cater for high-class custom trade this catalogue will be of special interest.

The Committee on Sewers of Bristol, R. I., has been authorized to extend the present system of sewers. The probable cost of the new work is $58.000.

T. B. Walmsley, Woodcliff, Bergen County, N. J., in addition to making a specialty of Lead Burning, also manufactures Lead Burning Apparatus and a compound Blow Pipe for lead burning and soldering with illuminating gas. This Blow Pipe has been found a great convenience by many plumbers in lengthening traps and doing lead burning, where gas can be had. Mr. Walmsley has recently shipped one of his lead burning machines to a customer in Henderson, Ky., and as his apparatus becomes better known his trade is gradually increasing.

George Callahan & Co., 218 Front street, New York, are sending to steam fitters and plumbers blotters calling attention to Callahan's Old Reliable Steam Joint Cement. The Cement is sent in the form of a dry powder, to be mixed when needed for use with pure boiled linseed oil. It is claimed that the joints can be easily separated at any time, leaving the thread clean and rustless, an advantage over red lead, in addition to which it is cheaper. It is stated that the cement will stand 300 pounds pressure on 18-inch flange joints, a test of several years demonstrating this fact. The house also make a specialty of Oils, Roof Cement, Roof Paints, Soldering Fluids and Plumbers' and Tinners' Sundries.

T. J. Cummins, 1035 Third avenue, New York, has recently installed a complete system of lead drainage pipe to dispose of the acids used in the power house of the street railroad company at Second avenue and Sixty-fifth street. All of the joints and seams were made by lead burning, Mr. Cummins having employed Thomas B. Walmsley, Woodcliff, Bergen County, N. J., the well-known expert, to do this part of the work for him.

G. P. Williams, manager for the St. Louis Stamping Company for 18 years before they were merged in the National Stamping & Enameling Company, and who has been employed with the last named corporation for the past 18 months, has established an office at 253 Broadway, New York City, where he represents a number of firms as their Eastern agent. Among the concerns represented are: Hall & Carpenter of Philadelphia, the Jacob J. Vollrath Mfg. Company of Sheboygan, Wis.; the Tea Tray Company of Newark, N. J., and the Sozo Supply Company, manufacturers of metal and silver polish. Mr. Williams is the secretary of the Sozo Supply Company.

Architect George H. Gilbert is preparing plans for a $65.000 school building to be erected on Weathersfield avenue, Hartford, Conn.

The Canadian master plumbers hold a liberal view as to what constitutes a master plumber, as may be seen from the definition recommended by Alderman Lamarche of Montreal in an address at the recent master plumbers' convention at Toronto. He held a master plumber to be one who works in the plumbing, steam fitting and gas fitting lines, roofing, tinsmithing and is a member of any local association. He further explained that a plumber should not be debarred from joining a local association because he also engaged in steam fitting or roofing.

The United States Radiator Company of Dunkirk, N. Y., announce the appointment of Walter S. Appleton as acting manager of their New York branch, occupying offices in the Park Row Building. Harry S. Martin will return to the home office, where, as assistant general manager, he takes charge of the sales department.

A special supplement to the *Herald* of Southbridge, Mass., presents a portrait of George C. Winter and speaks of the enterprise which he has displayed in building up the different branches of trade in which he is engaged. Mr. Winter carries a complete stock of Hardware and Stoves, has a well equipped Sheet Metal working shop, makes a specialty of plumbing, steam and hot water heating and hot air furnace work. The business was established in 1865 by his father, George L. Winter. After 25 years' experience in the management of his father's business George C. Winter succeeded him in 1900.

Apropos of the recent hot spell the Baltimore *American* presents the following, which will be appreciated by the trade: "Mr. Topfloor, Dear Sir—Replying to your favor of January 15, stating that you must have more heat in your flat, I take pleasure in informing you that the entire building is now thoroughly heated, and in expressing the hope that you are satisfied. Mike Muggins, Janitor. July 9, 1901."

The report has obtained currency that the National Tube Company are to absorb the Shelby Steel Tube Company, the identity of the latter being lost. This is not correct. The United States Steel Corporation acquired the Shelby Steel Tube Company through an exchange of securities, and the National Tube Company will operate the Shelby Steel Tube Company under a contract with the United States Steel Corporation. There will be, however, no merger of the National Tube Company and the Shelby Steel Tube Company.

Cleveland Galvanizing Works, Cleveland, Ohio, are now prepared to furnish a line of Galvanized Steel Pump Tubing and Galvanized Iron Curbs in connection with their Pump Chain and Rubber Buckets. They refer to the Curbing as thoroughly galvanized throughout, making it absolutely rust proof. The Tubing is also guaranteed not to rust.

The contract for equipping the County Insane Asylum at Sheboygan, Wis., has been awarded to the H. Mooers Company of Milwaukee for $5315.

The plumbers at Easton, Pa., are on a strike on account of dissatisfaction with the attitude of the master builders toward the striking bricklayers and plasterers.

Melvin Yost of Bendertown, Pa., a pump maker, while cleaning *débris* from a well this week was overcome by gas while being drawn to the surface and fell into the well and was drowned.

Fifty union steam fitters of the 150 journeymen in Worcester, Mass., have gone on a strike for an eight-hour day and a minimum wage of $3.25 per day. Their employers are now paying $3 for a nine-hour day.

New Firms and Changes.

A. W. Gearhart and George R. Evans have formed a partnership in the plumbing and gas fitting business at Fresno, Cal.

M. R. & N. G. Pierce, who have carried on a plumbing business for a number of years at Springfield, Mass., have dissolved partnership. N. G. Pierce retiring. Charles F. Peck, who had been in the employ of the old firm for several years, has become a partner with M. R. Pierce under the firm name of M. R. Pierce & Peck.

The Harbison Plumbing & Heating Company of Schenectady, N. Y., have filed a certificate of change of name to the Ridgway & Tyler Company. Frederick W. Ridgway of Albany, N. Y., is the president of the company.

The Gibson Heater Company have been incorporated at Muscatine, Iowa, with a capital of $2500, with J. H. Munroe, president, and F. B. Munroe, secretary.

The W. H. Denslow Company have been incorporated at Waverley, N. Y., with a capital of $20,000, by W. H. Denslow and C. P. Hutchins. The company will manufacture the Denslow Combination Steam, Hot Water and Hot Air Heater. Ground has already been broken for the foundry building, which will be 40 x 80 feet in size.

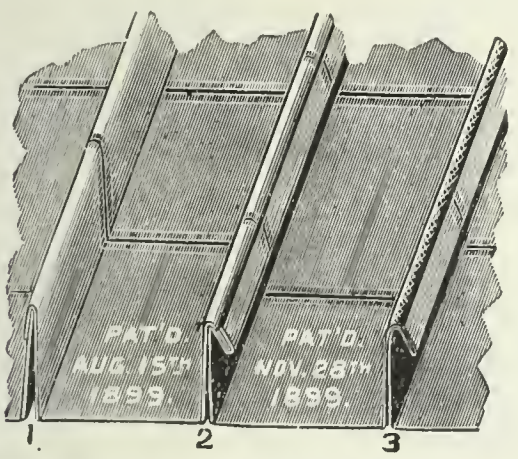
C. L. Grant, artesian well contractor, of Providence, R. I., announces that he has purchased the business of Henry E. Corbin and the Wynne Machine Company in that city and will continue in the same line, being the agent for the Aermotor Wind Mills, Towers and Pumps. His headquarters are at 17 Byron street, Providence.

D. Saunders' Sons, Yonkers, N. Y., manufacturers of Pipe Threading and Cutting Machinery, have incorporated under the same name.

The Stafford & Ward Company of Jacksonville, Fla., have been incorporated with a capital stock of $5000, to conduct a general plumbing business.

REESE'S SOLDERED STANDING JOINT.

E. L. Parker & Co., 201 and 203 South Charles street, Baltimore, Md., advise us that the Reese's soldered standing joint, of which they control the patent, is being very



Reese's Soldered Standing Joint.

widely used in putting on tin roofs in the district in which the firm operate. The joint, which is illustrated in the cut given herewith, is claimed to make a perfectly tight roof. Another advantage obtained by the use of the joint is that the roof can be made nearly flat, only sufficient fall being given to allow the water to flow gently into a gutter, thus enabling more space to be secured in the building. The joint, it is stated, makes it impossible for the roof to leak, as it expands and contracts, while the plates used cannot separate at the joints. It is described as easy to put on and as having advantages over the ordinary flat seam or rib roof. The company say that the joint is specified by a large number of architects in their city, and that it has been used upon some of the finest buildings in Baltimore.

It is reported that the Ohio Falls Iron Company of New Albany, Ind., are contemplating the erection of a new Sheet mill.

FLASHINGS.

The Muskegon Tin & Novelty Company, Muskegon, Mich., have been organized with a capital of $50,000 to manufacture Tin Cans, Baking Powder Cans, Pill Boxes, Bread Trays and other Tin Goods. The promoters expect to have the enterprise in operation within 60 days, employing 75 to 100 men. The local Chamber of Commerce has offered the new company substantial encouragement.

The contract for the roofing and metal work for the power station for the Worcester & Blackstone Electric Railroad Company, at Millbury, Mass., has been let to the What Cheer Roofing Company, Providence, R. I. Twelve thousand feet of gravel roof will be required.

The National Can Mfg. Company of Brooklyn, N. Y., have been incorporated with a capital of $200,000. W. H. Hibbard, H. E. Hutchinson and H. Wilson are the directors of the concern.

The Toledo Machine & Tool Company, Toledo, Ohio, manufacturers of Presses, Dies, Punches, Shears and other Sheet Metal Tools, have shipped a number of Press Punches to England and Scotland, and have been awarded a contract by the United States Government for the Presses for the machine shop that is being equipped at the Government Arsenal, at Rock Island, Ill. The concern made shipments in June of nine full carloads of special machinery, in addition to a large number of smaller shipments.

Clark, Quien & Morse, Peoria, Ill., wholesale Hardware dealers and manufacturers of Eave Trough, Elbows, Washing Machines, Plecker's Corrugated Conductor Pipe, &c., have increased their capital stock to $100,000 from $75,000.

The Waukesha Steel Sheet Company have been organized at Waukesha, Wis., with a capital of $250,000, by J. E. Jones of South Chicago, F. J. Patterson of Cleveland, Ohio, and F. E. Ryan of Waukesha. They will build mills for rolling Steel Sheets and Black Plate for tinning. They expect to have three mills running on Black Plate by October 1, and to be making Tin Plate by December 1. A. M. Crane & Co., the Rookery, Chicago, will sell the product.

The Carnahan Tin Plate & Sheet Company have taken out a New Jersey charter with a capital of $500,000. This concern are building Tin Plate and Sheet mills at Canton, Ohio, the contract for most of the equipment being given to Edward E. Erikson, consulting engineer, at Pittsburgh. The plant will consist of six Sheet mills and six Tin mills, and there will also be a stamping works. Active work is now going on and the company expect to be in the market with their product in the latter part of this year.

H. Weiss & Co. have been organized as successors to the business carried on until recently by the Tinners' Machinery & Supply Company at 20 Cliff street, New York. The firm is composed of H. Weiss and Albert Hild. Mr. Weiss has been connected with the Tinners' Machinery & Supply Company and their predecessors for the past ten years and is thoroughly conversant with all the details of the business. The company deal in Tinners' Machinery, Tools and Supplies of all kinds, Skylight Gearing and Plumbers' Tools, and carry a large stock of these goods, which are well displayed in their spacious wareroom.

Under the title of "Coercive Trade Unionism as Illustrated by the Chicago Building Trades Conflict," James A. Miller, the well-known Chicago manufacturer of Sheet Metal Roofing and Spouting, has contributed a masterly article to the *Journal of Political Economy*, Chicago. This article is dispassionately written, and is one of the best presentations of the facts in the great strike of 1900 that we have yet seen. It is not only historical but also enters into the legal aspects of the conflict and gives much valuable information relative to the legal rights of employers and workmen. Mr. Miller displays as great ability in handling his pen as in working sheet metal, being equally at home in either line. The article has been reprinted in pamphlet form for general distribution.

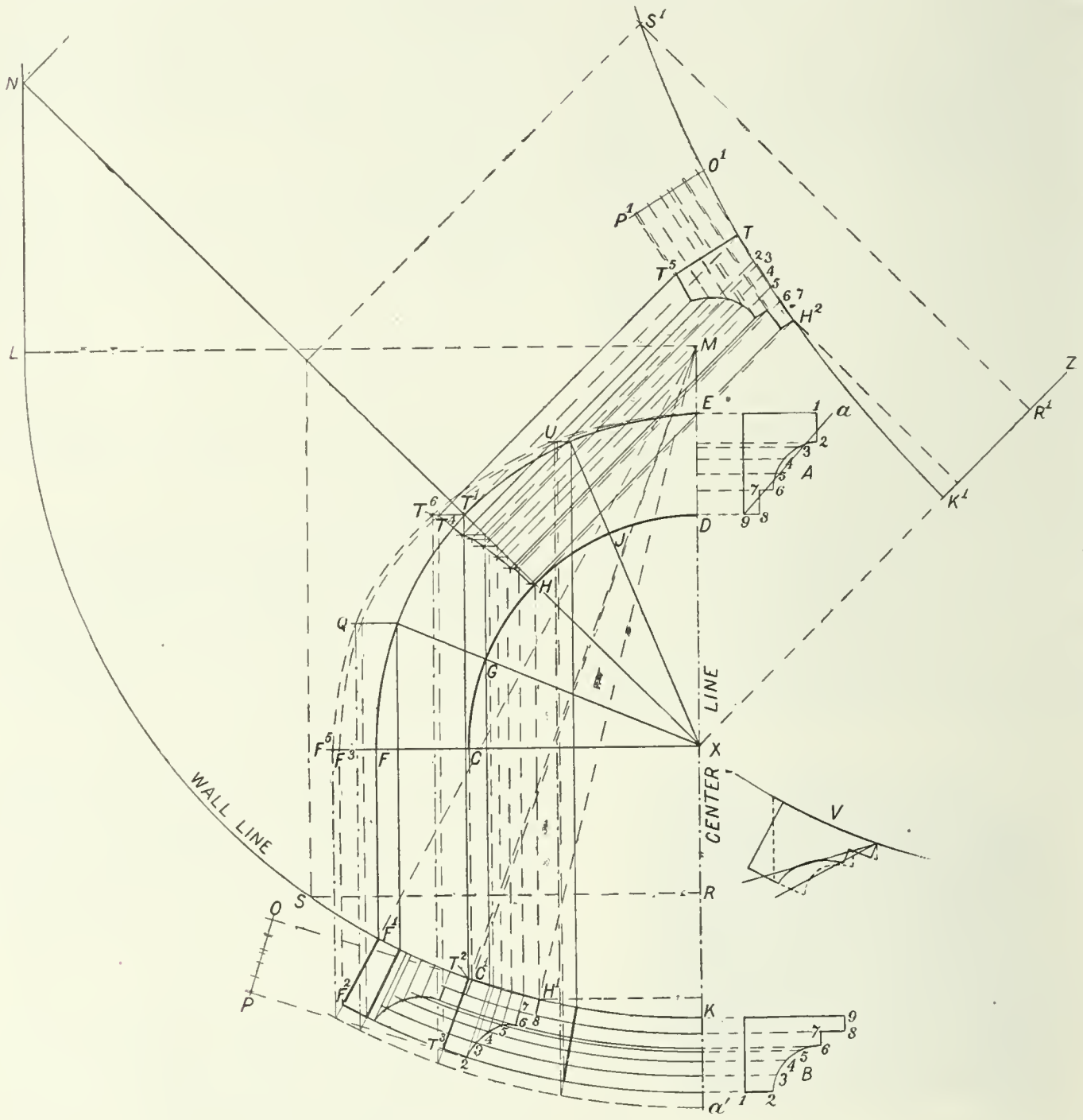
Problem 218.

PATTERN OF THE BLANK FOR A CURVED MOLDING IN AN ARCH IN A CIRCULAR WALL.

BY GEO. W. KITTREDGE.

The last problem of the "New Metal Worker Pattern Book," bearing the above title, is introduced in that work as a final mention of the great variety of conditions which may exist in the construction of arches in curved walls. The demonstration is written in general terms showing how principles explained in previous problems may be applied. The diagram there given shows the moldings of a semicircular arch in a curved or cylindrical wall whose radius in plan is probably three times that of the arch. The moldings, having a profile similar to that shown at A, Fig. 1, of the annexed diagrams, are carried around the opening of the arch in such a manner that the soffits, or those portions which are horizontal in that section, remain parallel to the center line of the plan throughout their course, as shown by a plan at the springing line. In the latter part of the second paragraph of the demonstration it is stated that the soffits above referred to might, with equal propriety, have been drawn radially toward the center of the curve of the wall in plan, and that in such case the profile would remain nearly normal at all parts of the arch.

A correspondent at Orange, N. J., wishes to be shown how to develop the patterns under the latter conditions, or with the lines drawn radially. He gives evidence of having studied the "New Metal Worker Pattern Book" pretty thoroughly, and will, no doubt, be able to make the applications referred to in the problem in regard to developing the pattern for the blank after its flare at the various parts of the arch has been determined. The flare of the blank, as the sides of the arch are approached, under these conditions will, of course, be much increased over that of a blank for a mold whose soffit remains parallel to the center line of the plan, as in the problem. A comparison of the profiles of the arch at the springing line drawn according to the two methods under consideration is shown at V of Fig. 1, the different flares of the blanks being shown by the oblique lines. Although, as above stated, the profile of the arch, according to our correspondent's requirements, would remain nearly normal throughout its course, yet certain changes must take place, and a sufficient number of profiles or stays will have to be raked, not only as a means of determining the flare and thereby the plan and elevation of the blank so that it may be triangulated, but also as a means of constructing a templet for use in raising the mold, such as that shown in Fig. 744 of the "New Metal Worker Pattern Book."



Problem 218.—Fig. 1.—Method of Developing Profiles for an Arch in a Curved Wall.

of the arch, one-half of which, shown by C D, is a semicircle in the elevation, and that a section upon its center line is that shown at A. The plan of the wall against which the moldings of the arch are placed is shown below, the center from which the curves are struck being at M. First drop a perpendicular from the point C, cutting the inner line of the arch in plan at C^1. Divide the curved portion of the profile A into any convenient number of equal spaces and project lines from its several points and angles to the center line of the arch, as shown from D to E. Now set off the several spaces in D E upon the plan, beginning at C^1, as shown from C^1 to F^1, and erect the perpendicular from F^1, cutting the springing line of the arch at F. It will be noted that on account of the obliquity of the lines of the plan at this point the distance F C is less than E D. For the same reason the width of the arch mold, as measured on the surface of the wall in the elevation, upon lines radiating from the center X, must apparently decrease from the center toward the base as the obliquity of the wall increases. These widths can only be determined as the sections upon the several lines assumed are developed.

To develop the profile of the arch on the springing line, first place a duplicate of its profile A in such a po-

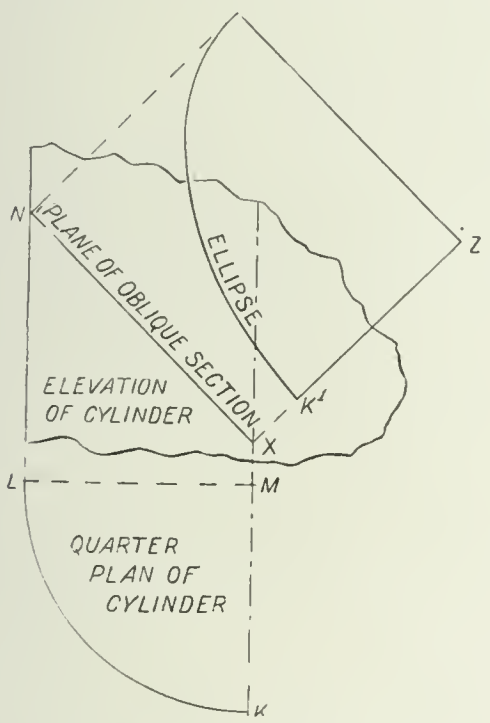


Fig. 2.—Reduced Diagram, Showing Relation of Parts in Fig. 1.

sition in the plan that the lines of projection shall be parallel to the center line, and that its wall line shall coincide with the wall line of the plan, all as shown by B. Divide the curved portion into the same number of equal spaces as at A, and from the several points and angles project lines upon the center line, as shown, and thence carry them around the center M indefinitely. Now from the center M draw radial lines through the several points between C^1 and F^1, cutting the arcs of corresponding number just drawn. A line traced through the points of intersection, as shown from F^2 to C^1, will give the desired profile.

Divide the curve C D of the arch into any convenient number of spaces, as shown by the points G, H and J, through which draw lines from the center X indefinitely, these lines representing the planes upon which it is desired to construct sections of the curved wall, and against them profiles of the arch molding. The method of constructing the sections upon these lines is necessarily more complicated than that employed at the springing line, for the reason that the sections, being oblique to the axis of the cylindrical wall, are necessarily elliptical in outline. It is advisable to make these sections as few in number as will define the course of the mold, as after an elevation and plan of the blank have been obtained from them its outlines may be redivided for the purposes of triangulation.

Before obtaining the profile or stay of the arch corresponding to one of the oblique lines previously drawn, as X H, it will first be necessary to construct at least a partial section upon the plane which that line represents through the circular wall surface F F^1 of the plan, of which M is the center. As any oblique section of a cylinder is an ellipse, any convenient method of drawing a perfect ellipse may be employed after the major and minor axes of the same have been ascertained. In the present case K M is one-half the minor axis of all the oblique sections. To find one-half the major axis of either of the sections first complete the quarter plan of the cylinder by extending the arc of the wall line till it intersects a horizontal line from M, as shown at L. From L erect a perpendicular, forming the outline of the cylinder in elevation, then extend X H, the line of the desired section, till it cuts the outline of the cylinder, as shown at N. Then X N will be one-half the major axis which is to be used with K M in constructing the elliptical section against which a stay or profile of the arch at H must be developed. The relations existing between the plan, elevation and elliptical section of the cylinder are more clearly shown in Fig. 2, in which the reference letters correspond with those used in Fig. 1. As this operation possesses no features not generally understood this diagram will require no further explanation.

As the only portion of the ellipse required is that against which the back of the stay is to be placed, each portion may also, and perhaps more easily, be obtained in the following manner: First drop a perpendicular from the intersection H of the plane of the section with the soffit or intrados of the arch (the position of the extrados not having been yet determined) to the wall line in plan at H^1. A sufficient portion of this line from H^1 toward L, as to S, may now be divided into spaces, and lines drawn from each of the points so obtained at right angles to the center line K M, cutting the same between K and R. The several spaces thus obtained on the center line may be transferred to any convenient position on a line, X Z, draw from X at right angles to X N, as shown from K^1 to R^1. From the several points assumed between H^1 and S on the circular wall line erect perpendiculars cutting H N, and finally from the points thus obtained on H N project lines parallel to X Z cutting corresponding lines drawn from K^1 R^1 parallel to X N. A line traced through the points of intersection between H^2 and S^1 will give the portion of the ellipse required. This operation is only partially shown in the drawing, and when the elliptical section has been obtained the lines employed in obtaining the same should be erased to avoid confusion with the points and lines of the subsequent operation of obtaining the stay.

Upon the line H^2 S^1 set off from H^2 the several spaces upon the line D E representing the width of the arch mold, beginning with D, as shown from H^2 to T. From the points in H^2 T carry lines, shown dotted in the diagram, at right angles to X N, cutting the same from H to T^1, and from the points on H T^1 drop perpendiculars cutting the wall line in plan, as shown from H^1 to T^2. Lines may now be drawn from the center M through the several points in H^1 T^2 to intersect with the arcs of corresponding number previously drawn in the plan, all as shown between H^1 and T^3, and as described in connection with the profile at F^2 C^1. Lines traced through the several points of intersection will give the true plan of the section or stay to be placed against the line X N of the elevation. It will now be necessary to obtain a correct presentation of the section in the elevation. Since by the original requirements all horizontal lines of the sections are to be drawn radially from M of the plan, it follows that each point of the profile will appear in elevation, not at the point on H T^1 which represents its position on the wall surface, but upon a line drawn horizontally from such point away from the center line. Therefore, from the points in H T^1 draw horizontal lines to the left (from the direction of the center line) and intersect them by vertical lines of corresponding number erected from the intersections previously obtained at H^1 T^3 in the plan. The vertical lines are omitted in the diagram, but the intersections are shown between H and T^1 of the elevation. Having now obtained with accuracy the position of the several points in the profile in plan and elevation, perhaps the most practicable method of obtaining the stay is as follows: Through the points H^1 and T^2 draw a straight line and extend the same to any

convenient distance outside the plan, across which draw at right angles any line, as O P'. From the several points of the section in plan carry lines parallel to H^1 O cutting P O. Now through points H^2 and T of the elliptical section draw a line, which continue to any convenient distance above or below, across which draw at right angles the line P^1 O^1. Upon P^1 O^1 set off from O^1 the several spaces previously obtained on P O, as shown, and from the points thus obtained draw lines indefinitely parallel to O^1 H^2, intersecting the same with lines of corresponding number drawn from H T^4 parallel to H H^2, shown solid in the figure. A line traced through the points of intersection, as shown by H^2 T^5, will give the required profile or stay.

It may be remarked that the profile just developed is not, strictly speaking, a section on the plane X N, because its horizontal lines are drawn, not in the plane of the elliptical section, but radially from the axis of the cylinder—that is, from a perpendicular erected upon M of the plan acting as a directrix of those lines, the other directrix being the elliptical curve H^2 T, shown in plan by H^1 T^2, and in elevation by H T^1. The surface of the stay is therefore really a twisted surface, being, as it were, radial to both curves. The twist is, however, too slight to be considered where practical results only are looked for. Of course, it is possible to construct a perfect section through the arch mold upon any one of the lines radiating from X, or in fact upon any plane that can be shown upon the drawings after an elevation has been completed. Such an operation, though complicated, would be both interesting and instructive. After the sections on the several lines radiating from X have been developed the lines of the elevation may be drawn from the points on E D corresponding to points 1, 2, 6, 7, 8 and 9 of profile A, through corresponding points of the several sections, one of which only (that representing point 1) is shown dotted in the diagram, passing through T^4 and terminating at F^3. A complete front elevation of the arch, showing all the lines of the moldings as they would appear when finished, is not, so far as obtaining the pattern is concerned, necessary, but a correct elevation and plan of the splayed surface representing the blank for the raised mold must, of course, be completed, and this may be accomplished as soon as the line representing the flare has been drawn and its extreme points located upon the several sections.

A suitable flare for the blank is shown by line drawn from *a* to point 9 of the normal profile A. Its length must, of course, be equal to the stretchout of as much of the mold as it is desired to raise in one piece, but so far as the demonstration is concerned may be assumed to be of the length drawn. The point *a* being on the line of the top of the profile extended, its projection may be set off on the center line of the plan, as shown at *a'*, from which point an arc is drawn parallel to the other lines of the plan, as shown dotted in the drawing, forming the outer line of the plan of the blank. To obtain the elevation of the line from *a* of the profile first extend the lines F^1 F^2, T^2 T^3, &c., corresponding to the top lines of the several stays, shown by heavy lines crossing the plan till they cut the dotted line drawn from *a'*, as shown. From these several intersections erect perpendiculars, shown by a dot and dash line, cutting the extended top line of corresponding stays in elevation, as shown at F^5, Q, T^6 and U. The elevation of the outer line of the blank may then be drawn through the points thus obtained, as also shown dotted and outside of the line corresponding to point 1 of profile A. Should the inner point in the profile of the blank fall at any point other than that shown, the position of its line in elevation may be found in a similar manner by first locating it upon the plans of the several sections in plan in accordance with its position on profile A.

The outlines of the blank having thus been obtained in the plan and elevation, a tracing or other accurate duplicate of the same should be made upon another sheet of paper, so that the subsequent operations of triangulation may be conducted as a separate operation and without confusion of lines. The several operations necessary to complete the work from this point are given in Problem 215, to which the reader is referred.

In the working out of any similar problem in actual practice the pattern cutter must use his own judgment in discriminating between that which is scientifically accurate and that which is practical and less laborious. Where the width and projection of the mold are considerable in proportion to the span of the arch correct stays should be developed, but in a comparatively narrow mold the result produced by the raking of the intermediate stays would vary so little from the normal profile that the latter could be easily adapted to the requirements.

The J. M. & L. A. Osborn Company.

J. M. & L. A. Osborn of Cleveland, Ohio, who succeeded the old firm of Myers, Osborn & Co. in 1888, have changed their style to the J. M. & L. A. Osborn Company. The firm were incorporated on July 1 under Ohio laws with a capital stock of $200,000. The corporation assume all the partnership liabilities and will collect all accounts due to the partnership. They carry a large line of all kinds of tinners', roofers', builders' and furnacemen's supplies, together with a full line of enameled iron ware, copper ware, tinware, wooden ware, house furnishings and kitchen specialties. The change is made as the firm about to move to their new quarters, located in the Viaduct, in the building formerly occupied by the Co-operative Stove Company.

The shipping facilities in the new location will excel those of any house in the jobbing line in Cleveland. The building has a frontage of 120 feet on the Viaduct and below of something over 100 feet on the C. C. C. & St. L. R. R. A private switch permits the concern to unload directly into their warehouse, thus enabling them to handle their goods at a minimum of cost. The D. & C. and C. & B. boat docks are just across Merwin street from their building, and all the railroad depots of the city are in close proximity on the Viaduct level.

An immense salesroom will enable the new company to show to advantage their line of goods, and the offices will be so arranged as to make them comfortable and convenient in every way, so that the trade will undoubtedly find it a pleasure to do business with them in their new location. Two large electric elevators will insure quick delivery of all goods to their proper places, and the city trade will have their orders promptly and carefully attended to through a large delivery room on the Viaduct level.

The officers of the new company are James M. Osborn, president, and L. A. Osborn, secretary and treasurer. The company will have their branch warehouse at 39 Vine street, Columbus, Ohio, as before, where can be found at all times their celebrated brands of roofing plates, bright plates, sheet iron, copper and a line of tinners' and roofers' supplies.

Allegheny Steel & Iron Company.

The new sheet mills of the Allegheny Steel & Iron Company, at Tarentum, near Pittsburgh, will soon be completed. Some of the machinery has already been tried out and runs very satisfactorily. The works of this concern consist of a 50-ton basic open hearth furnace, a bar mill of special design, six sheet mills and three cold mills. The six hot mills are driven by a 38 x 60 inch Corliss engine, heavy type, and the bar mill by a 50 x 72 inch Corliss engine, heavy type. The concern will make from 60 to 70 tons of steel sheets per day, and have a very complete plant. Plans are under way for a material enlargement of the works, with a view of taking up the manufacture of other products, galvanized sheets included, but these plans have not been fully developed as yet. The Pittsburgh offices of the concern are in the Park Building.

THE cold rollers at the Humbert works of the American Tin Plate Company, at Connellsville, Pa., have struck for an increase in wages. After the present stock of Black Plate is used up the mill will have to close down unless a settlement of the trouble is made in the meantime.

The Sheet Scale Conference.

The conference of official representatives of the Amalgamated Association of Iron, Steel and Tin Workers and the Uuited States Steel Corporation regarding the scale for sheet mills met at the Hotel Lincoln, Pittsburgh, at 10 o'elock on Thursday moruing. The steel eombination conferees present were: Warner Arms, viee-president of the American Tin Plate Company; Veryl Preston of the Amerieau Steel Hoop Company, William Leeds of the American Sheet Steel Compauy, J. V. Jenks of the American Steel Hoop Company, and Charles W. B. Ray, chief engineer of the American Tin Plate Company. The workers' organization was represented by the Geueral Executive Committee, the highest body in the assoeiation, the members of whieh include President T. J. Shaffer, Secretary aud Treasurer John Williams, Assistant Secretary M. T. Tighe, Business Manager Benjamin I. Davis, and the trustees and viee-presidents of the association.

The object of the confereuee was the settlement of the strike ordered by the Amalgamated Assoeiation in the uniou mills of the American Sheet Steel Company and the American Steel Hoop Company. In additiou to the settlement of this question the eonference was admittedly undertaken to avert a possible general strike in all the mills controlled by the United States Steel Corporation. The union mills of the two eoustituent companies named have beeu closed down sinee June 29, beeause of the refusal of the Steel Corporation to sign the Amalgamated scale for their nonunion plants. Two sessions of the conference were held ou Thursday, the first from 10 a.m. until noon and the second from 2 to 5 p.m. As no settlement was arrived at at these sessious the eouferenee adjourned to meet at 10 o'cloek on Friday morning.

At the afternoon session President Shaffer, in behalf of the Amalgamated Assoeiation, formally presented the case of the organized workmen and strikers. He laid stress upon the faet that until this year the union had made no effort directly to force all the plants of the combine into union lines, for the reason that it was thought better to have that movement originate and be earried on amoug the workmeu in the nonuuiou mills themselves. Since last year, however, a uew eondition eonfronted the union men. The officials of the various eompanies, he claimed, had plainly indicated their policy to operate their nonunion plants in preferenee to the union, only working the latter when it was found absolutely neeessary. This plan, Mr. Shaffer declared, was foreing men to desert the organization in order to get work. It was a matter of life or death for the Amalgamated Association that the nonunion mills be done away with, as Mr. Shaffer put the situation. The alleged method as adopted by the American Sheet Steel Company in the case of the Old Meadow mills at Scottdale, Pa., was especially dwelt upon, and the demand made by the eompauy that the mill in question be left out of the seale entirely in the future was taken as an indieation of the general plan of the company in dealing with the Amalgamated Association. It meant, said Mr. Shaffer, the giving up of all rights of the unions at the plants of the Uuited States Steel Corporation.

In reply to the statement of President Shaffer the officials of the various companies gave an outline of their position, saying that they have no intention of working any injustice toward union workmen in their mills. The feeling for the Amalgamated men, they stated, had always been friendly, and they have no desire to force any trouble in regard to the association.

The tone of the debate on either side is described as having been amicable, and it was apparent that the manufacturers' representatives were prepared to go a considerable length to gain a peaceful solution of the existing difficulties. The impression is that the present conference will come to some sort of an agreement, as both sides will be the gainers by an avoidance of a general strike at this time.

It is intimated that concessions will be allowed the manufacturers in the mills that have agreements with their men made previous to last year's wage settlement. These mills, it is said, will be allowed to work out their annual agreemeuts, whieh expire on January 1 next, but after that time it is intended by the Amalgamated Association that these mills also shall eome under the jurisdiction, or sooner, if the men beeome members of the association previous to the expiration of the annual agreement. The sheet mills at Vandergrift and Leechburg, so far as known, are the only ones where agreements with the workmen antedate the formation of the Amerieau Sheet Steel Company and remained in foree when the plants were absorbed.

There is no doubt that the Amalgamated Association has ehosen a very opportune time to enforce its demand for reeognition of the seale iu nonunion mills. The demand for sheets is remarkably heavy, priees are very profitable, and it is entirely to the interest of the United States Steel Corporatiou to keep the mills steadily employed. It is understood, too, that pressure from high offieials of the United States Steel Corporatiou, and also from banking interests represented by J. P. Morgan & Co., has been brought to bear upon the offieials of the constituent eompanies, with the objeet of indueing a prompt settlement of the present trouble.

The conference was resumed on Friday and is still iu sessiou as we go to press.

TIN HOUSE SCALE SIGNED.

It has been offieially announeed that the tin house scale has been settled by the Internatioual Tin Plate Workers' Protective Association with the Amerieau Tin Plate Company. Advances in wages were granted ranging from 3 to 10 per eent. The Amalgamated Association scale, which was signed last month, went into effect on July 1. The seale of the tin house employees becomes effeetive on July 15.

Seamless Tubing.

We have received a eatalogue from the Benediet & Burnham Mfg. Company of Waterbury, Conn., deseribing their Benediet niekel seamless tubing and its properties. This tubing is produced by a pateuted hot rolling proeess of which this company are the sole lieensees in the United States. By this process a single operation transforms a solid eylindrical billet of the heated metal into a tube, the action of the rolls inereasing the firm and solid structure of the metal and produeing an exeeedingly tough aud strong tube. The billet is revolved between conical rollers, whieh force it ou the forming mandrel, giving a spiral formation to the metal eomposing the walls of the tube, and thereby greatly inereasing its tensile strength. A parallel to this tubing is found iu a twist gun barrel, the fibers of which are arranged spirally to its axis, rendering it eapable of resisting great bursting strain. After the hot rolling proeess has thus formed the tubes they are then cold drawn suffieiently to give a perfeetly smooth finish both inside and outside.

The absorption of the National Steel Company and the Amerlean Steel Hoop Company into the Carnegie Steel Company was eonsummated last week at a meeting of the directors of the eoneerns named in New York City. All of the offieials and clerks of the National Steel Company and the American Steel Hoop Company have left New York and are now quartered in the Carnegie Building in Pittsburgh, where in future the general offiees of these corporations will be located. At first it was intended that the names of these two eoneerns should be dropped and all business carried on under the name of the Carnegie Steel Company. This, however, was changed, and the two concerns will eontinue to trade under the names of the National Steel Company and the American Steel & Hoop Company, as before.

E. L. Parker & Co., Baltimore, Md., are distributing a blotter in the interests of Parker's Double Dipped Old Method Superior Charcoal Roofing Plate. This Plate is described as made from specially prepared, hammered blooms, and is redipped and double dipped on a porous base, the dipping being done by the old hand proeess, thus securing the greatest amount of coating with an even finish. The Plate is elaimed to have five times the amount of coating used on ordinary Charcoal Ternes and to be exceedingly soft and thoroughly pliable.

THE LETTER BOX.

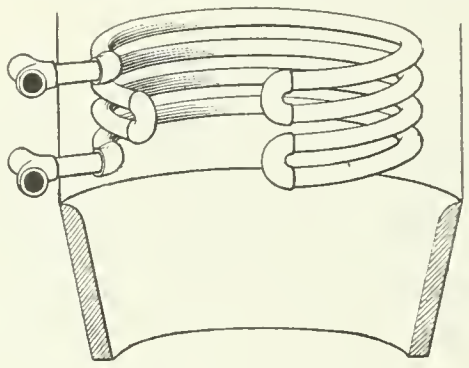
Inquiries in regard to practicat questions of general interest are invited, in reply to which we shatl be glad to receive suggestions and information from our readers.

Correspondents are requested in atl cases to give their names and addresses, which wilt not, however, be pubtished or disclosed without their consent.

HEATING FROM COIL IN FURNACE.

From C. A. T., Brantford, Canada.—We propose to place a coil of 2-inch pipe over the fire in a hot air furnace having a 28-inch fire pot, for the purpose of heating six radiators exposing a total of 275 feet of radiation. We would like to know how many feet of 2-inch pipe should be included in the coil to do the work satisfactorily? As a 2-inch main is hardly large enough to supply the amount of radiation, would it be of any advantage to increase the size of the mains outside of the furnace, by placing a two-branch header on the ends of the coil for the flow and return connections, or, perhaps, a double elbow, as per the sketch?

Note.—Benefit would be derived from increasing the size of the flow and return mains at a point where they connect with the heating coil, either by use of the fittings suggested, or by a pipe of larger diameter if a single flow and return main is used. The amount of surface which the heating coil must expose depends somewhat on the way the furnace is run. A very important feature of combination heating work will have been mastered if, in designing such a plant, the warming to be done with hot



Heating from Coil in Furnace.

air are so divided that the water will not be overheated in order to raise the air to a temperature to do effective work, or, on the other hand, the water is kept at a temperature high enough to accomplish its work when the air is sufficiently heated to keep the air warmed portion of the building comfortable in both mild and severe weather. Assuming that this part of the work has been correctly divided up, the manner in which the fire must be run to heat the building can be readily anticipated.

If the furnace is of ample capacity so that the fire would be run mildly, 1 square foot of heating surface in the coil will carry less radiation than if the furnace is to be fired hard to do the work. Some benefit is derived by having at least one turn of the coil run around the fire pot so that it will come directly in contact with the fire. This will increase the heating power of the surface exposed. It is not uncommon to estimate that 1 square foot of heating surface in the fire in a furnace will carry 30 square feet of radiation, and as the coil must carry the flow and return pipes as well, ordinarily the surface they expose will be about 25 per cent. of the surface exposed in the radiators. Consequently, in this instance, the coil would have to carry about 345 feet of heating surface. By dividing this amount by 30 square feet it will be found that about 11 square feet of surface would be required in the coil, and by multiplying this by 1.6, the number of lineal feet required to expose 1 square foot of surface in a 2-inch pipe, it will be found that the coil will require 17½ lineal feet to present the desired surface. If it is estimated that the fire will be run so that 1 square foot of surface will carry 40 feet of radiation, by dividing the 345 by 40 and multiplying the result by 1.6 it will be seen that only 13¾ feet of 2-inch pipe will be necessary. This, however, is a point which our correspondent must decide for himself.

SANITARY HEATING.

From R. R. M. Carpenter, Wilkes-Barre, Pa.—In reply to the inquiry of "W. I. E." in *The Metal Worker* of June 22, I would say, in comparing the hot air system of heating and ventilation with a direct-indirect steam system, that the former is the more sanitary. In some cities a law has been passed forbidding the heating of schools with direct steam. To pass such a law as this, sufficient proof must have been found to pronounce direct steam unsanitary. Now it is plain to see that the simple converting of direct steam into direct-indirect—that is, simply cutting a hole in the walls behind the radiators to admit fresh air, and this only when the wind happens to be in the right direction, cannot be deemed as sanitary as the admission of large quantities of fresh air from all sides of the building, collected into a fresh air room, and from there passed through the furnace chamber and so on up sufficiently large flues to regulate the flow.

The cost of a perfect steam system may be figured as follows: Take a standard school room of 50 pupils. To heat it in compliance with the Massachusetts law, which requires that each pupil must receive a quota of 30 cubic feet of air per minute, which is equivalent to 1800 cubic feet of air per hour for one pupil, or 90,000 cubic feet for 50 pupils, and adding 10,000 cubic feet for safety, there would be an admission of 100,000 cubic feet of air per hour into the room. One cubic foot of air can be raised 1 degree by .02056 heat unit; therefore 100,000 cubic feet of air may be raised 1 degree by 2056 heat units, or it may be raised to 100 degrees, the temperature at which the air should pass the registers, by the use of 205,600 heat units. To evaporate 1 pound of water into steam at atmospheric pressure, 966.1 heat units would be required. Now if we have 205,600 heat units, we shall require as many pounds of water as 966.1 is contained in 205.600 heat units, or 212.8 pounds of water, to be evaporated in the boiler per hour. W. J. Baldwin says that each pound of coal will evaporate 10 pounds of water per hour; so the amount of coal used per hour would be one-tenth of 212.8, or about 21.3 pounds of coal. Say the boiler is fired 11 hours a day for five days a week and five hours on Saturday and Sunday, we will have 65 hours a week the boiler is fired. Or, counting 27 weeks a year in which the boiler is fired, the boiler will be fired 1755 hours per school year. The coal, then, burned in a school year would be 37,482 pounds, or, roughly, 19 tons, which, at $2.50 per ton, amounts to $47.50 per year. The price I give is that of four years ago and compares with the actual cost of furnace systems at that time. I have on record in my desk a school building in Kingston, Pa., which was heated by the Carpenter system of hot air heating for just $13.60 per room, giving precisely the same quantity of air as that specified in the above steam system.

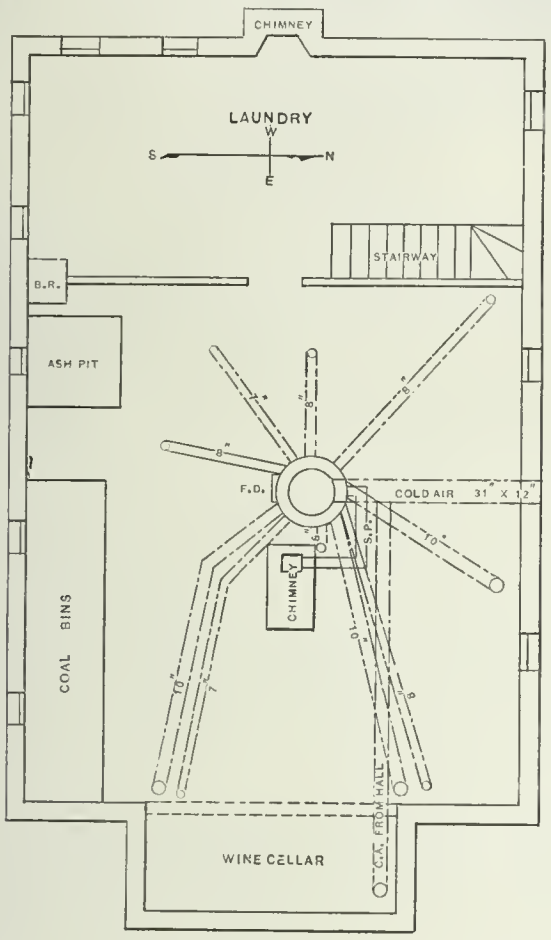
CLEANING ZINC.

From W. B., Bridgeport, Conn.—Will *The Metal Worker* or some of its readers kindly give a method for cleaning zinc, such as is used under stoves and for sink lining? In almost every house where I work I am asked what is the best way to clean zinc? I have advised the use of kerosene, sapolio, &c., but am met with the complaint that the zinc cannot be properly cleaned with these materials.

Answer.—A well-known receipt book says that zinc is generally mechanically cleaned by scouring with sand and powdered pumice. The bath used for brass is also very effectual. This is composed of 1 part ordinary nitric acid and 1 part sulphuric acid, and must be washed off with clean water. For large articles which cannot be dipped in the bath of acid and water, apply a solution of potassium, ammonium and tartrate, thickening with sufficient clay to make a fluid paste. After a few hours rub the article with a brush dipped occasionally in fine sand, moistening with the pickle, then polish with powdered charcoal or Vienna lime. After the zinc has been cleaned a good way to continue its bright appearance is to give it an even coat of some substantial transparent varnish.

SMALL FLUES HINDER HEATING.

From J. T. B., Putnam, Conn.—A customer here had a portable furnace having a 48-inch casing with a 28-inch



Small Flues Hinder Heating.—Fig. 1.—Cellar Plan, Showing Proposed Piping System.

fire pot put in his house last fall, and it has never given entire satisfaction. I am now called upon to reset the

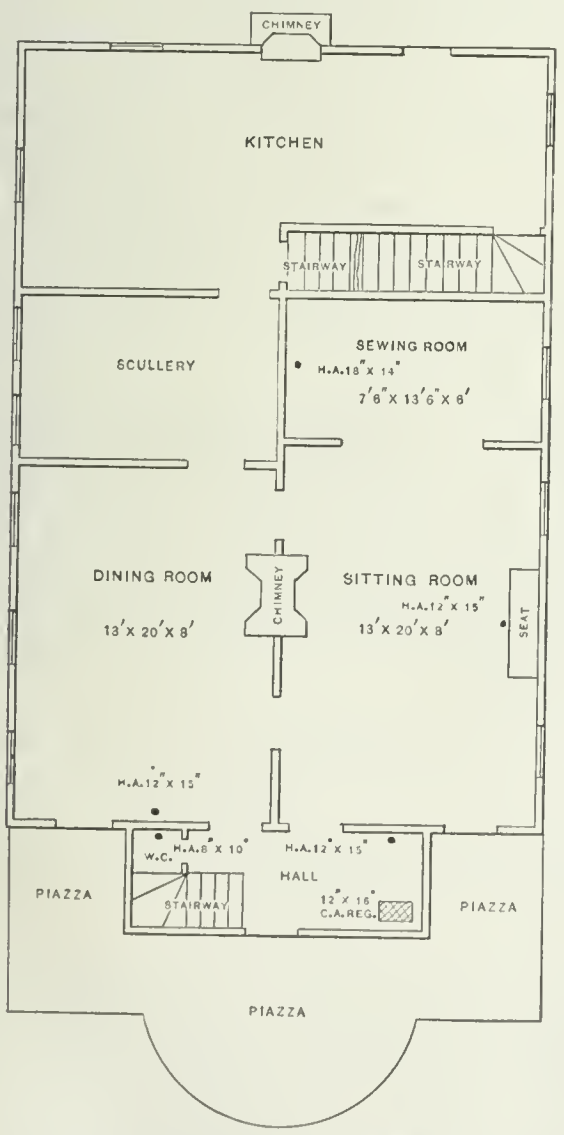


Fig. 2.—First-Floor Plan.

furnace and to guarantee it to heat the house to a temperature of 70 degrees in zero weather. The house is a well built frame construction exposed on all sides. I submit in Fig. 1 a plan of the cellar showing the arrangement which I propose to use. Figs. 2 and 3 are plans of the first and second floors and show by dots the location and give the size of the registers, which are all placed in the side walls. I shall use the same size of hot air pipes as have been used heretofore, for I do not think the trouble has been in them. The furnace was originally set without a cold air pit under it, and the cold air entered at the back of the furnace on the level of the cellar bottom. It was originally set 9 feet northeast of the position in which I intend placing it, with the door facing west and the cold air coming in from a northeast window. The cold air duct had four bends in it. I propose to arrange a cold air duct as shown and increase its size from 31 x 9 inches to 31 x 12 inches, and in addition I shall take a 10-inch return pipe from a cold air register to be placed in the hall. The area of the hot air pipes will be 560 inches, while the combined area of the new cold air duct and the 10-inch return pipe will be 450 inches. It is claimed by the makers that this fur-

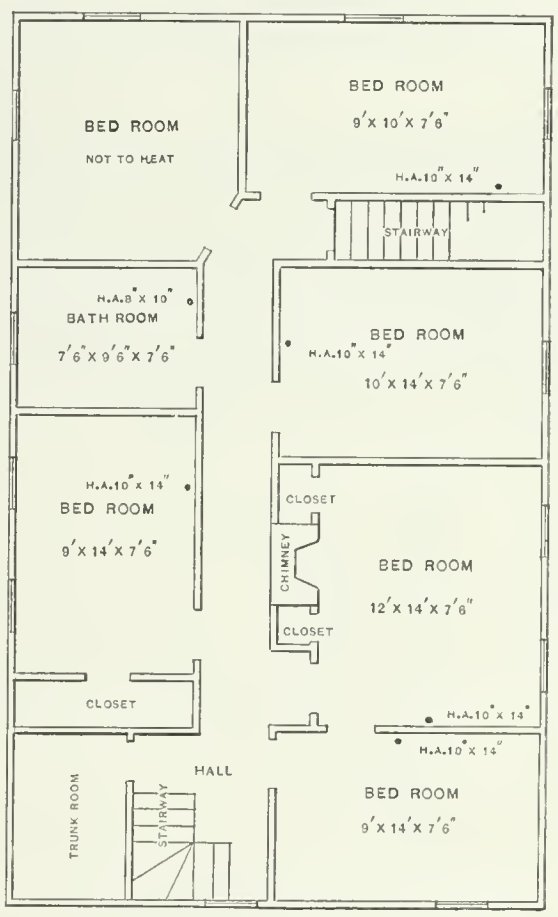


Fig. 3.—Second-Floor Plan.

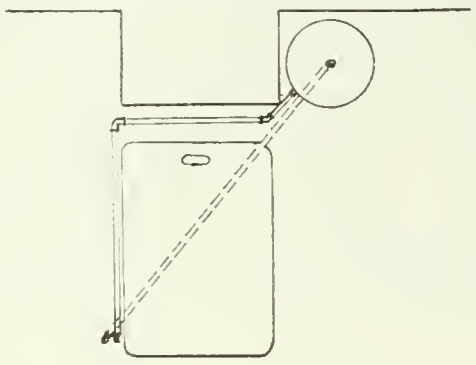
nace has capacity for heating from 10 to 15 rooms, and it will be seen that in this house it is called upon to heat but 9 rooms and hall, as the 10-inch pipe leading to the hall also leads to the northeast bedroom and heats it as well. The furnace is connected with a 9 x 12 chimney. I should like to know whether my proposed plan will be successful in heating the building.

COATING FOR GALVANIZED TANK.

From A. L. B., Eustis, Fla.—I need some information and take the liberty of inquiring for it from *The Metal Worker* and its readers. There is a square wooden tank built in the top of a house here and lined with No. 26 galvanized iron, which supplies water for cooking, bathroom, &c. The water is pumped from a well to the tank and is very pure and almost as soft as rain water. The tank has been in use for eight years, but this summer it is pitted with small holes, apparently from rust. I have put a new lining of better quality galvanized iron into the tank. The question I desire to have answered is this: Is there any kind of paint that I can put on the iron to prevent it from rusting again? I have found it difficult to make any kind of paint stay on this kind of iron, even in the air, let alone under water.

CONNECTING A BOILER UNDER DIFFICULTIES.

From Oliver Twist.—We have had occasion many times to connect boilers under the same conditions as shown in the sketch of "J. O.," in *The Metal Worker* of June 15, and can guarantee him success if he connects the boiler as shown in the accompanying sketches. The plan given in Fig. 1 shows the upper pipe from the water front run along under the top edge of the stove, while



Connecting a Boiler Under Difficulties.—Fig. 1.—Plan, Showing Piping.

the lower pipe is dropped through the floor, goes direct to the boiler under the cellar joists, and is provided with a blow off valve, as shown.

The side elevation, given in Fig. 2, shows the upper pipe from the water front connected at the top of the boiler, while Fig. 1 shows it entering the side with a 45-degree elbow. It will work satisfactorily either way. If it is not desirable to carry the pipe beneath the floor it may be taken across to the boiler just beneath the oven door. It may be noticed that the bottom of the boiler is

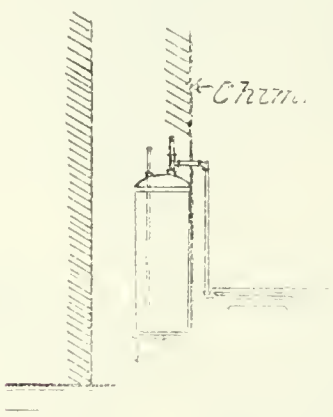


Fig. 2.—Elevation, Showing Piping.

too low to allow of a continuous fall from the boiler to the water front for both pipes, even if it was desired. But without discussing this, we will simply say that many stoves and ranges are connected as shown and work without any trouble—no noise and plenty of hot water.

WATER CLOSET CONSTRUCTION.

From W. S., Blue Island, Ill.—Please explain the difference between the siphon jet closet and the siphon washdown closet.

Answer.—A siphon jet closet is one in which the discharge from the closet bowl into the waste pipe is partially induced by means of a portion of the flushed water entering the discharge passage of the closet at the bottom of the water seal and being directed toward the waste pipe. The object is to induce an overflow into the weir formed by the shape of the outlet in the closet, which makes a practically right angled turn before it reaches the soil pipe connection. The weir retards the flow of the water slightly, so as to fill the full bore of the pipe and prevent air rushing up. The result is a downward movement of water in the stack, having exactly the same effect as that produced in the long leg of the siphon. This enables the atmospheric pressure to exert its force on the surface of the water in the closet bowl, and the contents of the closet are discharged.

In the washdown siphon closet there is no right angled turn acting as a weir to secure the siphonic action. Some washdown closets, however, are induced to discharge by means of a jet. The washdown siphon is really the best form of a hopper and trap combined closely connected. In operation the overflow is sufficiently quick and in large enough volume to set up a siphonic action and exhaust the contents of the bowl.

TRADE NOTES.

The Joseph Dixon Crucible Company, Jersey City, N. J., are sending out a postal card in the interest of Dixon's Silica Graphite Paint, on which it is pointed out that this Paint is manufactured of only one quality and of the purest materials obtainable. The company have gotten out a pamphlet entitled "Economics of Protective Paint," which they are willing to send to any one interested, upon application.

The Garvin Machine Company, Spring and Varick streets, New York, are distributing a folder giving a list of the second hand Machinery which they are carrying in stock, including a large number of Sheet Metal Working and other Machine Tools of various kinds.

The Superior Mfg. Company of Allegheny, Pa., have been chartered with a capital of $25,000 for the manufacture of Sheet Metal Gas Burners for domestic and manufacturing purposes. W. T. Bradberry, William H. Collingwood, T. M. Dudgeon and Robert A. Bradford are the incorporators.

John Wesley Harris, formerly a member of the firm of Harris Brothers, Gas Meter manufacturers of Philadelphia, died on July 6 at Landsdowne, Pa., aged 78 years. He was born at Liberty Grove, Md., and for a number of years was occupied in the Stove manufacturing business.

The Star Antimony Company of Mena, Ark., with a capital of $500,000, were recently chartered to mine Antimony near that town. T. S. Mahoney is president of the concern and L. Underwood secretary.

At a meeting of the stockholders of the Carborundum Company of Niagara Falls Vice-President F. W. Haskell was promoted to the presidency of the company. In taking this office Mr. Haskell succeeds E. G. Acheson, who is the discoverer of the process by which Carborundum is made. For some little time Mr. Haskell has been the chief executive officer of the company. Mr. Acheson remains with the company as consulting engineer, but will give much of his time to his artificial graphite interests. Secretary Rayner and Treasurer Manley were re-elected to the same offices by the stockholders of the Carborundum Company.

The Bryan Vacuum Molding Machine Company of Lockport, N. Y., have been organized to manufacture and sell the Bryan Molding Machine and the foundry accessories necessary to be used in connection with it. It is a pattern drawing machine and is capable of use with the ordinary wood patterns. It is not proposed to build a plant at present. The machine will be on the market within the next two weeks. The Eastern representatives are the Power Specialty Company of 126 Liberty street, New York, where one of the machines may be inspected.

The Union Mfg. & Specialty Company, recently incorporated, will this week take over the business heretofore known as the Union Mfg. Company. The new company will continue the manufacture of foot power Grinding Machines and Lathes, and Hardwood Specialties, at 506 and 508 Genesee street, Buffalo, N. Y., and will be under the same management.

United States Consul Winter of Annaberg, Germany, says it is claimed that the Lucas light, manufactured by the Deutsche Beleuchtungs und Heiz-Industrie Actien-Gesellschaft, Berlin, can successfully compete with electricity as an artificial light. The apparatus, adds the Consul, is simple, can be attached to the ordinary gas pipe, and may be readily lighted by pulling a wire. The intensity of the light is equal to 500 candle-power. One important feature claimed for it is cheapness, in comparison with electricity.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is ½c. lower; business quiet.

Copper is quiet and firm.

Pig Lead remains firm and unchanged.

Spelter is dull and without change.

Antimony is quiet; no change in prices.

Nickel is still scarce and firm.

Aluminum is active at former prices.

Tin Plates are in steady demand and prices strong.

Sheets continue in very active demand; recent reduction in price has not affected local quotations.

Old Metals are quiet and rather weak.

Pig Iron is quiet, but shows more strength.

Sheet Copper is in good demand and firm in price.

Sheet Zinc is unchanged.

Hardware is moving in good volume for the season and the tone of the market is strong.

Plumbers' Supplies are very firm in price, with satisfactory volume of business.

Wrought Iron Pipe is scarce; jobbers have advanced prices 5 per cent.

Cast Iron Pipe and Fittings are moving actively and prices are strong, with upward tendency.

Steel Clad Bathtub quotations have been advanced 10 per cent.

Lead Pipe and Sheet Lead are firm and higher.

Pumps have been advanced 10 per cent.

Shot was advanced this week.

Wire Nails are in fair demand and without change.

Cut Nails are irregular in price and in moderate demand.

Wire continues very active and firm.

White Lead is firm.

Linseed Oil has scored another rise of 5c. per gallon.

Spirits Turpentine is ½c. a gallon higher.

METAL MARKET.

Office of *The Metal Worker*, 232-238 William street, New York. July 12, 1901.

Pig Tin.—During the closing down of the New York Metal Exchange from July 4 to 8 a heavy advance in spot Tin occurred in London. At the opening of the market here on Monday it was found that London prices had soared many points in the interval. This advance was followed up on Tuesday, when the rise culminated in the price of £140 for spot Tin. The cause to which this rise is attributed is that the stock of Tin in London was cornered by one party, who was able to dictate spot prices. On Wednesday a sharp break occurred, however, followed by a temporary upward reaction, and again by a break on Thursday. The market at the close had recovered somewhat, but showed, as the result of the fluctuations, a decline of about ½c. from the figures ruling a week ago. Straits Pig in small lots is quoted at 28¾c. to 29¼c. per lb. Business here was of small proportions, consumers not being inclined to buy beyond the limit of their actual needs.

Copper.—The market here was quiet to the point of flatness, transactions being light, and prices firm at the level ruling for some weeks past. Small lots of Lake Ingot are quoted at 17¼c. to 17½c. per lb., and Casting Copper at 16¾c. to 17c.

Sheet Copper.—The demand for Sheet Copper keeps up in good volume. It is apparent that a large consumption of this material is going on. The demand from the Cornice trade is described as brisk, much Sheet Copper being used in the construction of the many large new buildings now going up in various parts of the country. Prices are firm and unchanged on the basis of 21c. per lb. for moderate sized lots of Sheet Copper from store.

Pig Lead.—The market is entirely without new feature, the demand being of moderate proportions and prices unchanged and steady. Small lots of American Pig are quoted at 4.60c. to 4.62½c. per lb.

Spelter.—Spelter remains very dull and prices weak, although quotably unchanged. Good Western brands in small lots are quoted at 4.45c. to 4.50c. per lb.

Sheet Zinc.—Jobbers report a fair seasonable demand for Sheet Zinc, without any features of special interest. Prices are without change, 600-lb. cask lots being quoted at 6¾c. per lb., and smaller quantities at 7¼c.

Antimony.—There is no change in this metal. The demand is somewhat slow and prices remain as given in our last report. Cookson's in small parcels rules at 10½c. to 11c. per lb., and Hallett's 8¾c. to 9½c.

Nickel—Is firm and without change. The metal is still quite scarce, and in small lots is quoted nominally at 60c. to 65c. per lb.

Aluminum.—An active demand for Aluminum continues at former prices—viz., 37c. per lb. for small lots of No. 1 Ingot guaranteed 99 per cent. pure, and 35c. for 100-lb. lots.

Tin Plates.—There is nothing new to be noted in this market. Deliveries continue on a liberal scale and new business is of fairly large proportions. Consumers, however, do not seem to be placing many large orders for future deliveries. The signing of the Tin Plate wage scales for the year ending June 30, 1902, is a satisfaction to the trade, as removing the risk of a prolonged shut down of the mills during the summer, with a possible attendant scarcity in the supply of Plates. The retail demand is of satisfactory volume and covers all varieties of Coke and Charcoal Bright Plates. Roofing Ternes are not as active as Bright Plates, although the movement in these goods is of fair proportions. Prices are firm and unchanged, jobbers quoting American Bessemer Coke Plates, I C, 14 x 20, at about $4.85 to $4.90 per box, and I X at $5.95 to $6 for moderate quantities delivered at New York or corresponding points. A slight decline in the Welsh market was reported this week.

Sheets.—The trade are still discussing the recent reduction in the prices of Black and Galvanized Sheets made by the American Sheet Steel Company, and the impression is very prevalent that the real reason for this cut was to discourage importations, as no other valid cause can be discovered for the action of the company at the present time. The reduction does not seem to have been followed by the independent mills, who are holding to their former prices, and it has not in any way affected retail prices in this section. Meanwhile, the scarcity of Sheets is becoming more emphasized each week. Jobbers are hard put to it to meet the requirements of their customers, and consumers who are obliged to have stock for immediate use are glad to pay a handsome premium on quoted rates in order to secure their supplies. Deliveries of both Black and Galvanized Sheets inside of two or three months are almost impossible to get. Most of the mills are entirely sold up for the third quarter of the year, and some have a large part of their tonnage booked for the fourth quarter. Jobbers are quoting No. 27 Black, One Pass Cold Rolled Soft Steel Sheets, at 3.65c. to 3.70c., and Galvanized Sheets at 62½ and 5 per cent. to 65 per cent. off the list.

Chicago advices are as follows: The Sheet situation is peculiar. Notwithstanding the reduction in prices made by the leading Sheet company the market here is actually stronger. Large buyers assert that it is impossible for them to purchase Sheets at the reduction announced. The independent mills are maintaining the old prices and will not accept business at the reduced figure. Jobbers are actually advancing prices from stock, instead of reducing them, because of the heavy drafts now being made on them. They claim that it

would be unwise to reduce prices in view of the difficulty in replacing what they sell. No. 27 Black Sheets are firm at 3.40c. to 3.50c. from store, and Galvanized at 65 and 10 to 70 off. Some of the largest jobbers are selling Galvanized Sheets at 65 and 10 in carload lots.

Old Metals.—Trade is quiet and prices are without quotable change. Dealers are paying about the following prices for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 15 c.
Light and Tinned Copper	per lb. 13½c.
Heavy Brass	per lb. 10 c.
Light Brass	per lb. 8 c.
Lead	per lb. 4 c.
Tea Lead	per lb. 3½c.
Zinc	per lb. 2¾c.
No. 1 Pewter	per lb. 18½c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	$6.00
Wrought Iron Scrap, per gross ton	$10.50 to 11.00
Heavy Cast Scrap, per gross ton	10.00 to 10.50
Stove Plate Scrap, per gross ton	7.00 to 7.50
Burnt Iron, per gross ton	5.00 to 5.50

THE PIG IRON MARKET.

NEW YORK.—The only purchases of any consequence made during the week were those of the Eastern Malleable interests, who took about 5000 tons of Coke Iron. Local founders are buying from hand to mouth, some of them at very frequent intervals. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $14.75 to $15; No. 2 Foundry, $14 to $14.50; No. 1 Soft, $14.50 to $15; No. 2 Soft, $14 to $14.50; No. 3 Foundry, $13.25 to $13.50; No. 4 Foundry, $12.75 to $13.25.

CHICAGO.—A great deal of figuring is going on, but the actual volume of business has not been large. Many consumers of Foundry Iron will be obliged to purchase good quantities to cover their wants the last half of the year; but, meanwhile, they are deterred from closing contracts by the danger of a molders' strike. As soon as this question is settled the Pig Iron market is expected to be active. The situation is strong among the local furnace companies. Their product has been cut down by the hot weather, and their yards are still completely bare of stock. The Southern furnace companies are adhering closely to recent quotations, although it is possible that the figures given below may be shaded 25c. per ton on Foundry Iron. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon.	14.90 to 15.15
Southern Coke, No. 1	14.65 to 14.90
Southern Coke, No. 2	14.15 to 14.40
Southern Coke, No. 3	13.65 to 13.90
Southern Coke, No. 1 Soft	14.65 to 14.90
Southern Coke, No. 2 Soft	14.15 to 14.40

PHILADELPHIA.—The feeling in regard to Pig Iron is more confident, and prices for all grades are firmer. Inquiries have been more numerous and a number of small lots have been sold. Consumers do not appear to be quite ready to take hold on large lots, but with stocks at a low point it is quite probable that some large sales will be made during the next few weeks. Some good sized inquiries are already in the market and others are said to be practically closed. The range of prices for Philadelphia and nearby places may be given as follows: No. 1 X Foundry, $16 to $16.25; No. 2 X Foundry, $15 to $15.50; No. 2 Plain, $14.50 to $14.75.

PITTSBURGH.—Two large corporations have bought Bessemer Pig Iron for July and August shipment, but beyond this very little has been done. Foundry Irons are quiet, and No. 2 is sold as low as $14, Pittsburgh. We quote Standard Bessemer at $13.75 to $14; No. 1 Foundry at $14.50 to $15; No. 2, $14 to $14.50, and No. 3, $13.75 to $14, all f.o.b. Pittsburgh.

CINCINNATI.—In Pig Iron circles the situation is still rather dull. There has been some Pipe and Foundry Iron selling round through the Central West in lots up to 2000 tons. The run of small orders has also been better. Prices so far as Southern Iron goes are simply wretched from the standpoint of many furnaces. While there have been no cuts made, so far as reported, on the minimum figures given here on lower grades, yet it is undoubtedly true that No. 2 Southern has been sold down to $10, Birmingham. There is much talk in effect that the decline in prices of the past two months was a senseless proceeding. Consequently a stronger feeling is developing, and it is believed the bottom of the fall has about been reached. Northern Irons are relatively much stronger than Southern, and but little disposition is shown to shade figures to meet Southern competition. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$13.50 to $13.75
Southern Coke, No. 2	13.00 to 13.25
Southern Coke, No. 3	12.25 to 12.75
Southern Coke, No. 4	11.75 to 12.00
Southern Coke, No. 1 Soft	13.50 to 13.75
Southern Coke, No. 2 Soft	13.00 to 13.25
Southern Coke, Gray Forge	11.75 to 12.00
Southern Coke, Mottled	11.75 to 12.00
Ohio Silvery, No. 1	15.50 to 16.00
Ohio Silvery, No. 2	14.50 to 15.00
Lake Superior Coke, No. 1	14.50 to 15.00
Lake Superior Coke, No. 2	14.00 to 14.50
Lake Superior Coke, No. 3	13.50 to 14.00

CHICAGO REPORT.

Scrap Iron & Steel.—Business has been quiet for some time, but as the mills are again running a better demand is expected soon. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap	$10.50 to $11.00
Machinery Cast	10.00 to ....
Malleable Cast	10.00 to 11.00
Stove Plate (free from burnt)	7.00 to 7.50
Burnt Iron and Grate Bars	5.50 to 6.00
Sheet Iron and Hoops	6.00 to 7.00
Plow Steel	9.00 to 10.00
Breaking Stock	9.00 to 9.50
No. 2, such as Shovels, Hoes, &c.	.... to 7.00
Old Boilers—whole (Iron)	.... to 7.00
Old Boilers (Iron) cut in single Sheets and Rings	9.50 to 10.00
Old Gas Pipe and Boiler Tubes	9.50 to 10.00
Cast Borings	.... to 3.75
Turnings	8.00 to 8.50
Horseshoes	11.00 to ....

Old Metals.—The demand is light and will continue so until labor troubles are settled. Dealers quote buying prices on small lots as follows:

	Per. lb.
Copper Wire and Heavy	15 c.
Copper Bottoms	13½c.
Copper Clips	14½c.
Red Brass	13½ to 13¾c.
Yellow Brass	10 c.
Red Brass Borings	11½c.
Yellow Brass Borings	9 c.
Light Brass	7¾c.
Pipe Lead	4 c.
Tea Lead	3½c.
Zinc	2¾c.
Pewter, No. 1	19 c.
Pewter, No. 2	10 c.

Old Rubber.—Nothing is doing in this line, dealers waiting for conditions to improve. Buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$20.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7 2-3c.
Rubber Car Springs	....	4¾c.
Inside Bicycle Tubing	....	21 c.
Outside Tubing	....	7¼c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—The first week of the month, as usual, has been quiet. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis	5.75	6.00
St. Louis	6.25	6.50
Kansas City, Mo	8.25	8.50

A discount of 20c. from these figures is allowed on all Coal ordered to be shipped in July.

In the first six months of 1901 the Maine shipyards turned out about 28,000 tons, gross, of new vessels, indicating that the total output for the year will exceed that of 1900. Bath yards alone have now in hand steel and wooden vessels aggregating nearly 20,000 tons.

THE HARDWARE TRADE.

At this season many influences tend to reduce the volume of business. Travelers are nearly all at home and there is thus a cessation in the active pursuit of orders. Principals and employees are enjoyiug or looking forward to vacations. With the lessened demand for goods there ls with both manufacturing and mercantile establishments more or less attention given to the review of the course of thlngs during the half year just passed and the closing up of its business. Preparatlons are also making for the prosecution of trade in the opening season. This calls for new plans and enterprises, the consideration of whlch reeeives a good share of the attention of progressive manufacturors and merchants. Faetories also are being shut down and overhauled and in some eases enlarged to meet the demands of the trade wlth inereased faeilities. The eondition of the market, too, encourages a waiting policy, so that while there is a good deal of buylng going on, it is not, as a rule, in espeeially large quantities. While these influences operate against a heavy volume of business, it is gratifying to note that there continues to be a good demand, and the general situation is eminently satisfactory. The promise of the erops is on the whole excellent, and there thus appears to be a basls for general prosperity. Notwithstanding setbacks in certain directions and in certain lines of goods, it is evident that the general export business of the eountry is larger than ever before, and that in this trade Hardware and metal products are holding an important place. Industrial and manufacturing enterprises continue to be actively prosecuted and there is more building than for several years. The state of the market is such that the trade ln most lines feel safe in placing orders for their requirements for the near future, but there is practically no disposition to speculate and a conservative policy is generally regarded as prudent.

NOTES ON PRICES.

Plumbers' Supplies.—Local jobbing houses report that the demand for Plumbers' Supplies still keeps up in quite good volume for the season of the year. The month of June with some of the leading concerns in thls line showed a favorable comparison with any previous month of the year, notwithstanding the great heat whieh prevailed throughout this section, and so far, July has kept up the record. This activity, however, is not attributable to any marked increase in the volume of city business, whieh is still below expectations. The larger demand comes almost wholly from the out of town trade, who seem to be more active than for many seasons past at this time of year. Prices remain firm, without indications of weakening in any quarter, owing to the actual demand for goods and the strength of raw materials. Further advances are expected in some lines of goods. The scarcity of supplies is still marked in connection with Cast and Wrought Iron Pipe, Enameled Sanitary Ware, Plumbers' Brass Goods, and Earthen Ware. Jobbers are finding great difficulty in meeting the wants of their customers in these lines.

Wrought Iron Pipe.—The Wrought Iron Pipe situation is about to undergo a radical change. It seems that within the past six weeks the jobbers in the vicinity of New York have advanced their prices between 12½ and 15 per cent. on all sizes of Pipe and Tubing. This has been done very successfully, and no advance was made in the prices quoted by the mills. The chief reason aseribed for the advance made by the jobbing trade is that Pipe is very scarce, and owing to this fact it would be nonsensical on their part to sell the goods which they have on hand at a low price, when by holding out and sticking together they can secure a much better prlee. Their judgment in the matter has been justified by the results. The consumers and the retail trade are paylng the new prices, and are paying them without much complaint. They are only too glad to get prompt service at any price. Never before has Pipe been so scarce. The claim that the scarcity was an artificial one is entirely unfounded, as there is an actual starvation iu the Pipe market, and it will take months before there will be any opportunity of catching up with the demand. The reeent hot weather shut down all of the galvanizing plants in Pittsburgh, and also all those in this vicinity, and Galvanized Pipe of all sizes is now at a premium. The ¾-ineh size has entirely disappeared from the market, and as this is the size most in demand the loss of it is felt very much by those having work to complete. Unless we have a prolonged spell of cool weather there will be no relief from the present condition of affairs. Those who have any eonsiderable quantity of Galvanized Pipe on hand will be able to net a handsome profit upon it. It is quite likely that within the next six months the Pipe situation will be so changed that prices will be considerably lower than they are at the present time. This state of affairs, of course, is conditional upon the Skelp production beiug doubled to meet the demand which will result from the new conditions. The total annual output of the mills embraced in the National Tube Company is somewhere in the ueighborhood of 800,000 tons, and the total annual producing eapaeity of the independent mills which are now in operation, together with the independent mills which are now in course of construction (not including those which are talked about, but those which are actually under way and will be completed within the next three or four months), will be about 1,250,000 tous. It can readily be seen that as soou as all those independent mills are ready to put their wares upon the market there must be a radical change in prices. The fact that the independent mills will be iu a position to turu out 50 per eent. more product than the mills operated by the trust must necessarily have a considerable effeet upou the market. It may be, however, that some of the independent mills now in course of coustruction will be bought out, or enter into some agreement with the trust, whereby they will be controlled or operated, thereby keeping the market firm. It will not be possible to tell until the mills are in actual operation what effect this enormous production will have upon the market.

Lead Traps.—On Juue 3 the mauufacturers of Lead Traps and Bends got together and formed au association of manufacturers, which adopted a new schedule of list prices, from which certain agreed discounts were to be given in all parts of the United States. This Trap list and the discounts applying to it went iuto effect immediately, on June 3. On June 25 the Manufacturers' Association issued new prices, which show an advance of 10 per cent. over the prices quoted when the list was adopted on June 3. Thls advance iu price applies on all Drawn Lead Traps and Bends, Drum Traps, Combination Ferrules and Combination Soldering Nipples and Unions. It is understood that within the next 30 days another advance, but not of such a marked nature, is likely to tako place, and it would be well for those who are not covered on this commodity to see that their purchases are made bofore August 1.

Pumps.—The manufacturers of Pumps met in Chicago on June 29 and advanced prices on all Pumps aud Cylinders made by the members of the Pump Manufacturers' Association. New prices have been made which show an advanee of 10 per cent. over the prices previously quoted.

Steel Clad Bathtubs.—The mauufacturers of Steel Clad, Copper Lined Baths and Galvanized Steel Enameled Bathtubs withdrew prices on July 2, and the new prices which have been quoted sinco then show an advance of 10 per cent. over the prices previously quoted. Tho price of Cast Iron Enameled Bathtubs and of the Composition or Nickeloid Bathtubs remains the same as those previously quoted.

Copper Range Boilers.—The manufacturers of Copper Range Boilers have advised the jobbing trade that they were compelled to withdraw all quotations on those goods, owing to tho fact that the market for the raw material has been advancing considerably of late. New prices have not yet been issued, but we understand they will show a considerable advance over those now being quoted.

Cast Iron Soil Pipe and Fittings.—The demand for Cast Iron Soil Pipe and Fittings shows no let up. It is reported to be the heaviest ever known in the history of the trade. Prices are held very firmly by the manufacturers at the full figures. Considerable scarcity is reported in some of the larger sizes. Most of the foundries are still considerably behind hand on their deliveries. Stocks in second hands are quite light.

Enameled Bathtubs.—The stringency in the supply of Enameled Bathtubs and other Enameled Sanitary Ware, which we have referred to from time to time for some weeks past, shows no abatement. There is an absolute famine of these goods in some sections. Notwithstanding that the foundries are making a full output they are from three to four months behind on their orders, and jobbers find it absolutely impossible to come anywhere near meeting the requirements of their customers. Manufacturers' prices remain at former level, but buyers who are in urgent need of Bathtubs are obliged to pay a sharp premium over quoted market rates in order to obtain prompt shipment. Even then they find difficulty in placing orders, as the stocks of these goods in jobbers' hands are insignificant.

Lead Pipe and Sheet Lead.—Under date July 10, the Colwell Lead Company, 63 Centre street, New York, announce the following net prices on Lead Pipe, Sheet Lead and Tin Lined Pipe, being an advance of 4-10 cent:

	Per pound.
Lead Pipe	5 4-10c.
Sheet Lead	5 8-10c.
Tin Lined Pipe	10 c.

Conductor Pipe and Eave Trough.—The market on Conductor Pipe and Eave Trough, plain and galvanized, is in good condition, as reflected in the volume of business and the fairly regular price of the goods, whether the product of the consolidated companies or those outside. The system of prices and discounts is devised to give the dealer North, East, South and West the goods at a uniform price. Where the freights vary compensation is made in the rate of discount according to the territory the goods are sold in.

Shot.—Under date July 8 the following revised prices on Shot are announced by the Eastern manufacturers, terms net cash 30 days, or 2 per cent. discount for cash in 10 days:

	Per 25-lb. bag.
Drop Shot, sizes smaller than B	$1.50
Drop Shot, B and larger sizes	1.75
Buck Shot	1.75
Chilled Shot	1.75
Dust Shot	2.00

In lots of 2000 pounds and upward taken at one time a discount of 20 cents per 100 pounds will be allowed.

Agate Nickel Steel Ware.—Lalance & Grosjean Mfg. Company, New York, announce a slight advance in the price of their Agate Nickel Steel Ware, the discount on which is now 33 1-3 and 10 per cent. in place of 35 and 10 per cent.

Wire Nails.—The demand for Wire Nails in New York is fair, but not altogether uniform. It is largely confined to small lots from store, which are quoted at $2.60 per keg.

Cut Nails.—The demand for Cut Nails is moderate, with considerable irregularity in prices. It is reported that Nails have been sold from store by New York jobbers as low as $2.15.

Wire.—The demand for Plain Wire continues heavy and is much larger than ever before at this season of the year. Mills are considerably behind on their orders and prices are firmly held, Plain Wire in small lots being quoted at 2.60 cents and Galvanized at 3 cents per pound.

White Lead.—The advances in price of Linseed Oil, together with the extreme heat, have reduced the demand for White Lead in Oil. No change in prices has been made, small lots of White Lead in Oil being quoted at 7 to 7¼ cents per pound.

Linseed Oil.—Another advance of 5 cents per gallon was made in the price of Linseed Oil on July 6. City Raw, in a retail way, is now quoted at 83 to 84 cents per gallon, Boiled Oil being 2 cents per gallon advance on Raw. The high price of Oil has lessened the demand, which is confined to small lots.

Spirits Turpentine.—The Turpentine market has gained strength during the week, and prices are a shade higher, the improved condition resulting from stronger Southern advices. Turpentine in small lots is quoted at 38 to 38½ cents per gallon.

A Novel Marine Torch.

A novel marine torch, in which acetylene gas is the illuminant, and of special design to insure immediate ignition on being plunged into water, is described in *Fielden's Magazine*. The torch, it is stated, "simply consists of a plain cylinder of metal, sizes varying from 3 to 8 inches in diameter and from 1 to 5 feet in length. The cylinder, which is sealed at each end, contains in a wire basket a quantity of carbide of calcium, and it also contains an air chamber to insure sufficient buoyancy. At the head of the cylinder a number of burners is arranged, adjacent to which is a small chamber containing calcium phosphide, which on contact with water generates phosphureted hydrogen, ignites and also lights up the acetylene as it issues." The torch, which has no mechanism, is automatic throughout, the only precaution necessary before plunging into water being the removal of a protecting strip of metal by pulling a ring. The illuminating power of the torch can be gathered from the fact that a 6-inch torch burns from an hour to an hour and a half with a candle power of 2000 and a flame 12 inches high, and other torches, which are rechargeable, will burn from half an hour to ten hours, according to size.

CONTENTS.

	Page
Editorials—	
A Half-Year's Failures	37
The Fire Waste	37
Good Counsel on Strikes	37
Problem 218.	38
Coal Production of 1900.	38
Loving Cup for Ex-President Boal. Illustrated	39
Meeting of Western Stove Manufacturers	39
Midsummer Meeting of the New York Stove Association	40
The Brien Heater. Illustrated	40
Twentieth Century Range	40
Robinson Tubular Furnaces	41
Nickel Plate Stove Polishes	41
Odd Plates	41
Annual Meeting of the Vulcan Club	42
The Eclipse Fruit Picker. Illustrated	42
The M & M. Combination Staple Puller and Fencing Pliers. Illus.	43
Chicago High Speed Rotary Washer. Illustrated	43
The Star Postal Scale. Illustrated	44
Cost of Doing Business	44
Stove and Hardware Dealers	44
The Smoke Test for Plumbing	45
Cooling Drinking Water	45
The Ridgway & Tyler Company	45
Henderson Thermo Steam Heater. Illustrated	45
Thatcher Steam and Hot Water Heaters	46
New Pipe Mills	46
The Heating, Ventilating & Foundry Company	46
New York City Notes	47
Trenton Potteries Company	47
Water Heaters for Summer Use	47
Heating and Plumbing Notes	47
New Firms and Changes.	49
Reese's Soldered Standing Joint. Illustrated	49
Flashings	49
Problem 218. Illustrated	50
The J. M. & L. A Osborn Company	52
Allegheny Steel & Iron Company	52
The Sheet Scale Conference	53
Tin House Scale Signed	53
Seamless Tubing	53
The Letter Box—	
Heating from Coil in Furnace. Illustrated	54
Sanitary Heating	54
Cleaning Zinc	54
Small Flues Hinder Heating. Illustrated	55
Coating for Galvanized Tank	55
Connecting a Boiler Under Difficulties. Illustrated	56
Water Closet Construction	56
Trade Notes	56
Trade Report—	
Market Summary	57
Metal Market	57
The Pig Iron Market	58
Chicago Report	58
The Hardware Trade	59
Notes on Prices	59
A Novel Marine Torch	60
Metal and Miscellaneous Prices	61
Labor Exchange—	
Help and Situations Wanted	65

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED JULY 12, 1901

The following New York quotations are for small lots:

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots.....₩ lb, 37¢
100-lb lots.....₩ lb, 35¢
Aluminum Sheet, B. & S. gauge.
In lots of 50 lbs or more.

	6-in.	14-in.	24-in.
Wider than.....	14-in	24-in.	30-in.
And including.....	₩ lb	₩ lb.	₩ lb.
Nos. 13 to 19.....	$0.42	$0.44	$0.47
" 20.....	.44	.46	.49
" 21 to 23.....	.46	.48	.51
" 24.....	.46	.50	.53
" 25.....	.47	.51	.54
" 26.....	.47	.54	.59
" 27.....	.48	.57	.62
" 28.....	.48	.57	.64
" 29.....	.49	.60	.69
" 30.....	.50	.64	.77

Note.—Lots of less than 50 lbs 5¢ ₩ lb extra.

Antimony—

Cookson.....₩ lb, 10½@11¢
Hallett's.....₩ lb, 8¾@9½¢
U. S.....₩ lb, 8¾@9¼¢

Brass—Planished.....net

Roll and Sheet.....15@20% off

Brass and Copper Tubes

Brazed Brass Tubing—

Brown & Sharpe's Gauge the Standard.

List Feb. 26, 1896.

Plain Round Tube.	Per lb.	
¾-in. up to 2-in.....	$0.35	30@35% off.
⅝-in. up to ¾-in.....	.36	
½-in. up to ⅝-in.....	.38	
⅜-in. up to ½ in.....	.41	
5-16-in up to ⅜-in.....	.48	
¼-in. up to 5-16-in.....	.65	
3-10-in. up to ¼-in.....	1.00	
⅛-in. up to 3-16-in.....	1.50	
Smaller than ⅛-in.....	Special	
3-in. and larger.....	Special	
2-in. to 3-in. to No. 19, inclusive.	.38	

Copper & Bronze Tubing—

3¢ ₩ lb more than Brass.

Conductors—

Corrugated. *Round or Square.*—

Galvanized ½ or more. N'st'd.....70&5%
" Not Nested.....70&2½%
" Plain Round, ½ or more. Nested.....70&5%
Galvanized, Plain Round, Not Nested. 70&2½%

Spiral Riveted.

Galvanized.....40%
See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—See *Strainers, Conductor.*

Copper—

Lake Ingot.....17¼@17⅝¢
Casting.....16¾@17¢
Sheet and Bolt.....21¢ ₩ lb basis
Cold Rolled Sheets.....22¢ ₩ lb basis
Cold Rolled and Polished Sheets.....23¢ basis
Planished Sheets.....24¢ basis
Bottoms, Pits and Flats.....₩ lb 25¢ basis

Eaves Troughs—

List Feb. 1, 1895.

Lap or Slip Joint, Galvanized, in crates 75&10%

Eave Trough Mitres—

Lap or Slip Joint.....list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin.....30%
Galvanized.....30%
Perfect Elbows.....40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz
No. 2.	.65	.70	.75	.80	.85 "
No 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Corrugated

Round or Square.

Galvanized.....60%

Gasoline—See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16.....	₩ lb 3.30....	3.35¢
Nos. 18 to 21.....	₩ lb, 3.40....	3.45¢
Nos. 22 to 24.....	₩ lb, 3.50....	3.55¢
Nos. 25 and 26...	₩ lb, 3.60....	3.65¢
No. 27	₩ lb, 3.70....	3.75¢
No. 28	₩ lb, 3.80....	3.85¢

Russia, Planished, &c.

Genuine Russia, according to assortment.....₩ lb 10½¢
Do. Stained.....6¢@10¢
Pateat Planished. ₩ lb A, 9¾¢; B, 8¾¢ net

Galvanized.

Nos. 10 to 16.....₩ lb, 12¢
Nos. 17 to 21.....₩ lb, 13¢
Nos. 22 to 24.....₩ lb 14¢
Nos. 25 to 26.....₩ lb, 15¢
No. 27.....₩ lb, 16¢
No. 28.....₩ lb, 17¢
No. 29.....₩ lb, 19¢
No. 30.....₩ lb, 21¢
36 in. 1¢ ₩ lb higher
62½&5&65% off

Kerosene—See *etroleum Products*

Lead—

American Pig.....4.60@4.62½¢
Bar.....5½@5¼¢
Pipe.....6½¢.....20% off
Tin Lined Pipe.....12½¢.....20% off
Block Tin Pipe.....40¢.....20% off
Sheet Lead, full rolls...7¼¢.....20% off
Sheet Lead, cut.....7¾¢.....20% off
Old Lead in exchange, 4½¢ ₩ lb.

Mitres, Eave Trough—See *Eave Trough Mitres.*

Nickel—

Per lb.....60@65¢

Paints, Oils, &c.—

Lead, White, Atlantic and Jewett's, 7¼¢
Lead, Amn. White, in oil.....7@7¼¢
Lead, Red, bbls. and ⅛ bbls.....7@7¼¢
Lead, Red, kegs.....7@7¼¢
Linseed Oil:
Raw, ₩ gal.....83@84¢
Boiled.....85@86¢
Spirits Turpentine:
In bbls.....38@38½¢
In cases.....46@46½¢
Putty:
In barrels and ⅛ bbls.....2½
In tin cans.....3½
In bladders.....2¼¢

Palm Oil. 1500 lb casks.

Fancy Lagos.....₩ lb 6 ¢
Clarified.....₩ lb 5¾¢
Accra.....₩ lb 5½¢
Half Jack.....₩ lb 5¼¢

Petroleum Products—

In Barrels (Barrel Included)
Stove Gasoline.....₩ gal. 12½@13¢
Kerosene.....₩ gal. 13@13½¢

Pipe, Drain.....40%

Pipe, Spiral—See *Conductors*

Registers—

List Feb. 1, 1899.
Black Japanned.....50&10%
White Japanned.....40&10%
Nickel Plated.....50&10%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze.....40%
Electroplated in Brass, Broaze or Copper.....40%
White Porcelain.....20%
Solid Brass and Bronze Metal.....20%

Roofing Material—

Heavy Single Ply Tar Felt,.....₩ ton $30.00
2 Ply Roofing Felt.....₩ roll, 108 sq. ft. 65¢
3 Ply Roofing Felt....₩ roll, 108 sq. ft. 85¢
Roofing Pitch ₩ bbl.....$2 38

Rosin

(Barrels of 280 lb. Barrels weigh actually about 400 lb).
Common and Good—Strained.

Rosin, C. & D.....₩ bbl.	$1.55	@$1.60
Rosin, E. & F.....₩ bbl.	1.65	@ 1.70
Rosin, G. & H.....₩ bbl.	1.75	@ 1.85
Rosin, I. & K.....₩ bbl.	2.00	@ 2.40
Rosin, M. & N.....₩ bbl.	2.65	@ 3.00

Seamless Brass Tubes—

Net List, February 6, 1899.

Shoes and Elbows—See *Elbows and Shoes.*

Slate Roofing—

According to size, f. o. b. cars, Quarry Station.
Pennsylvania:
Best Bangor, ₩ sqr.....$3.25@$4.50
No. 1 Bangor ribbon, ₩ sq. 3.00@ 3.50
Pen Argyle, ₩ sqr..... 3.00@ 3.60
Peach Bottom, ₩ sqr..... 4.85@ 5.60
No. 1 Boys, ₩ sqr..... 3.35@ 3.55
No. 1 Chapman Keystone ₩ sqr..... 3.25@ 4.25
Vermont:
Sea Green, ₩ sqr.....$2.00@$3.00
Purple, ₩ sqr..... 3.75@ 4.25
No. 1 Eureka, Unfading Green, ₩ sqr..... 3.25@ 4.25
Red, ₩ sqr..... 6.50@11.00
Maine:
Brownville, Unfading Black:
No. 1 quality.....$5.25@7.50
No. 2 quality.....$4.25@6.00

Solder—

½ & ⅓ guaranteed.....19@19½¢
No. 1.....15 @17½¢
Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Concentrated Soldering Flux.
f. o. b. New York.
In barrels, ₩ lb.....4¢
Smaller quantities, ₩ lb.....5¢
Eureka Soldering Flux—Triple Strength
In barrels, ₩ lb.....3 ¢
Smaller quantities, ₩ lb.....3½¢
Eureka Soldering Flux—Extra Concentrated
In barrels, ₩ lb.....4½¢
Smaller quantities, ₩ lb.....5 ¢
Eureka Soldering Flux—Crystal.
In 100-lb cases, ₩ lb.....7¢
Godney's Soldering Fluid.
In carboys or barrels, ₩ lb.....2¢
$1.50 for carboy or barrel; money refunded when returned.
Lennox Soldering Fluid.
In barrels, ₩ lb.....2¢
In carboys, ₩ lb.....3¢
Perfection Soldering Flux.
No charge for package.
Bbls. about 500 lb, ₩ lb.....3¢
½ bbls., about 300 lb, ₩ lb.....3½¢
Kegs, about 110 lb, ₩ lb.....3.45¢
Kegs about 55 lb, ₩ lb.....4¢
Yager's Soldering Salts.
1 lb bottles, each.....60%
5 lb bottles, ₩ lb.....40%

Soldering Coppers—

Per lb.....22@24¢

Spelter—

Western Spelter.....4.45@4½¢

Spiral Pipe—See *Conductors.*

Stove Pipe Elbows—See *Elbows, Stove Pipe.*

Stove Trucks—See *Trucks, Stove*

Strainers, Conductor—

Galvanized.....50%

Tin Pigs and Bars—

Banca, pigs, ₩ lb.....29@29¼¢
Straits, pigs, ₩ lb.....28¾@29¢
Straits, in bars, ₩ lb.....29¾@30¢

Tin Plates, American Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:		
IC,	14 x 20.....	$6.75
IX,	14 x 20.....	8.25
IXX,	14 x 20.....	9.50
IXXX,	14 x 20.....	10.75
IXXXX,	14 x 20.....	12.00
Melyn Grade:		
IC,	14 x 20.....	6.25
IX,	14 x 20.....	7.75
IXX,	14 x 20.....	9.00
IXXX,	14 x 20.....	10.25
IXXXX	14 x 20.....	11.50
Allaway Grade:		
IC,	14 x 20.....	5.50
IX,	14 x 20.....	6.60
IXX,	14 x 20.....	7.70
IXXX,	14 x 20.....	8.80
IXXXX,	14 x 20.....	9.90

Coko Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20.....	$4.95
" "	IX, 14 x 20.....	$6.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 lb.....	5¢
95 lb.....	10¢
90 lb.....	15¢
85 lb.....	20¢

Terne Plates—

N. B.—The following prices are for IC, 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 lb coating and $2.50 to $3 00 advance for 15 lb and upward.

About 40 lb coating.....	$15.50@16.00
About 30 lb coating.....	14.25@15.25
About 20 lb coating.....	12.25@13.25
About 15 lb coating.....	10.75@11.25
About 8 lb coating.....	9.50

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)..... $12.50
IXX, 14 x 28..(112 sheets)..... 13 50
IXX, 14 x 31..(112 sheets)..... 15.00

Troughs Eave—See *Eave Trough*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00
Steel Lock Frame, per doz..... 18.00
Daisy Improved pattern, ₩ doz... 18.00

Tubing—

Tin.....50% | Galvanized.....50%
Fittings for do.....40%

Zinc—

600 lb casks ₩ lb.....6¾¢
Per lb.....7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Fittings—

List of Oct 7, 1899
Cast Iron Fittings, Black and Galvanized, Standard sizes.....60@60&10%
Cast Iron Bushings and Plugs.65&10@70%
Cast Iron Flanges.....65&10@70%
Malleable Iron Fittings.....55@60%
" " Bushings.....65&10@70%
" " Unions.....65&10@70%
Wrought " Nipples.....65&10@70%
" " Couplings.....65&10@70%
" " Long Screws...65&10@70%

Cast Iron Soil Pipe—

List Feb. 25, 1901.
2 to 6 inch inclusive.
Standard.....55&10@60%
Extra Heavy.....65&10@70%
All Fittings.....70&5@70&10%

Merchant Wrought Iron Pipe—

List Feb. 15, 1900
Random Lengths.

	Black	Galv
⅛ to ¼ inch.....	50&5%	40%
⅜ to 10 inch.....	60%	40&10@50%
11 and 12 inch.....	50%	35%

Extra Strong Pipe—

Random Lengths

	Black	Galv.
⅛ to ¼ in.....	45%	30%
⅜ to 2 in.....	45%	30%
2½ to 8 in.....	45%	30%

Valves Cocks, &c.—

Iron Body Valves.....65&5@70%
Air Cocks and Radiator Air Cocks.....70@70&5%
Soldering Unions.....70@70&5%
" Nipples.....70@70&5%
Brass Unions (Rough and Finished).. 65&5@70%
Jenkins Bros.':
Iron Body Valves, except Gate Valves 55%
All Iron Valves, except Gate Valves.. 40%
Iron Body Gate Valves.....50%
All Iron Gate Valves.....35%
Iron Cocks, all Iron.....60&10%
" " with Brass Plugs.....60%
Brass Globe, Angle and Cross Valves.. 65&10@70&5%
" and Anglo Valves, hose outlet.....65&10@70%
Brass Garden Hose Valves.65&10@70&5%
" Horizontal, Vertical and Angle Check Valves.....65&10@70%
Brass Safety Valves.....55%
" " " Low Pressure....55%
Brass Radiator Valves....65&10@70&5%
" " Jenkins.....55%
Brass Jenkins' Globe, Angle, Cross and Corner Valves.....55%
Brass Jenkins' Safety and Check Valves.....40%
Brass Jenkins' Gate Valves.....50%
Brass Steam Cocks.....65&5@70%
" Gas Meter and Union Meter Cocks.....65&5@70%
Brass Fittings, Rough.....65&5@70%
" " Finished.....65&5@70%
" Bushings.....65&5@70%

Plumbers' Brass Work—

List of December 7, 1896.
Ground Key Work:
Rough Bibs and Stops.....65@65&10%
Finished Bibs.....60&10@65%
Rough Stop and Stop and Waste Cocks.....70@70&10%
Rough Stop and Stop and Waste Cocks, Patented.....60&10@65%
Compression Bibs.....65@65&10%
" " Flanged.....70%
Compression Bath Cocks and Double Bath Cocks.....70@70&10%
Compression Basin Cocks....65@65&10%
Fuller Bibs.....70@75%
Fuller Basin Cocks, Nos. 1 to 4....70@75%
Fuller Bath Cocks, No. 4½.....$2.25 net
Chain Stays.....60@65%
Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face....₩ set	$1.00	$1.10
Ground Face..₩ set	$1.05	$1.15

Basin Plugs.....60@60&10%
Sink or Bath and Wash Tray Plugs.... 60@60&10%
Basin Clamps.....75@75&5%

Bath Tubs—

Cast Iron Enameled Bath Tubs.
List of March 26, 1900.
Regular Patterns, Guaranteed, Complete Line.....10@10&10%
All High Grade and Special Pattern (except as below).....20%
"Diana" and "Brighton."".....20%
Non-Guaranteed Brands, complete line.....40%
Steel Clad Copper Lined Bath Tubs, list of Feb. 1, 1899.....45@50%
Solid Porcelain Bath Tubs.....20%
Solid Copper, list of Feb. 1, 1899.....20%

Boilers—

Standard Boilers:
30 gal.....65@65&10%
35 and 40 gal....."5@6 &5%
Other sizes up to 52 gal....50&10@60%
52 gal. and above.....50&10@60%
Extra Heavy Boilers:
18 to 52 gal.....50&10@60%
53 gal. and above.....40&10@15%

Sinks—

	Cast Iron—Black	Galv.
Sinks, Square, Half Round and Corner	50&5%	50&10@60%
Sink Legs.....	50&5%	50&10@60%
Sink Backs.....	50&5%	50&10@60%

Wrought Steel—

New Era, Galv'd and Enameled.....70&5%
New Era, Painted.....50&10%
L. & G.....50%

Miscellaneous—

Earthenware, List of July 17, 1899.....
Basins, Urinals and Hoppers.....40%
Closet Bowls, Sundries, Washouts and Pedestals.....40%
Drawn Lead Traps, List of June 3, 1901.....40&10&50%

ALPHABETICAL LIST OF ADVERTISERS.

Adam, W. J..... 31
American Furnace Co..... 15
American Hardware Mfg.Co. 77
American Sheet Steel Co....1&72
American Tin Plate Co..... 72
Asphalt Ready Roofing Co .. 73
Auer Register Co..... 28
Auld & Conger..... 68
Barstow Stove Co..... 80
Beckwith, P. D., Est. of..... 2
Berger Bros. Co.....29&69
Berger, L. D..... 76
Berger Mfg. Co 74
Bergstrom Bros. & Co..... 27
Bertsch & Co..... 78
Black, E. L. & Co..... 25
Bliss, E. W. Co..... 78
Blodgett, G. S. Co..... 28
Boynton Furnace Co..... 6
Brand Stove Co..... 23
Bray, J. & Co..... 69
Bridgeport Crucible Co..... 30
Bridgeport Stove Works..... 25
Brien Heater Co..... 25
Brohard Co..... 29
Brooklyn Metal Ceiling Co.... 70
Bruce & Cook.....73&80
Burgess Soldering Furnace Co..... 33
Burton, W. J. & Co..... 75
Callahan, Geo. & Co..... 69
Canton Machine & Mfg.Co... 76
Canton Steel Roofing Co..... 75
Charter Oak Stove & Range Co..... 16
Cheney, S. & Son 1
Cincinnati Stamping Co..... 76
City Forge & Iron Works..... 29
Clark, Henry N. Co..... 28
Clark Novelty Co..... 68
Clark, Quien & Morse..... 71
Clason Arch. Metal Works... 68
Clayton & Lambert Mfg. Co.. 33
Clough, R. M..... 79
Colwell Lead Co..... 32
Cooney & Geiger..... 69
Cope, Geo. W 31
Cortright Metal Roofing Co... 75
Cory, Uzal & Co 26
Crosby Steam Gage & Valve Co..... 1
Crown Ventilator Co..... 69
Curtis & Curtis Co..... 32
Dean Boiler Co..... 29
Detroit Stove Works..... 27
Dighton Furnace Co.....1&22
Dixon, Jos. Crucible Co..... 26
Double Truss Cornice Brake Co 76
Dowman Mfg. Co..... 69
Drake, W. H..... 24
Dreis, Andrews & Krump..... 76
Drouve, G. Co..... 70
Eclipse Stove Co..... 15
Edwards, J. H..... 32
Eller, J. H. & Co..... 75
Energy Elevator Co..... 31
Enterprise Stove Co..... 15
Esterbrook's, R. Sons..... 34
Excelsior Tool & Mch. Wks.. 76
Fanner Mfg. Co..... 29
Feun, Geo. E..... 69
Floyd, Wells & Co..... 23
Follansbee Bros. Co..... 1
Forest City F'dry & Mfg. Co.. 24
Foster, F. W. Mfg Co..... 34
Friedley & Voshardt..... 74
Frink, I. P..... 80
Galt, John & Sons..... 68
Garry Steel & Iron Co..... 73
Garvin Machine Co 77
Genuine Bangor Slate Co..... 68
Gerock Bros. Mfg. Co..... 70
Giblin & Co..... 19
Globe Ventilator Co..... 69
Gobeille Pattern Co..... 26
Gordon, W. J..... 79
Gorton & Lidgerwood Co..... 1
Graff Furnace Co..... 21
Gray, W. A..... 66
Greene, W. F., Est. of..... 31
Grimm, G. H. & Co..... 1
Gummey, McFarland & Co... 71
Gunster & Forsyth..... 33
Gurney & Co..... 27
Gurney Heater Mfg. Co..... 23
Hamlin, G. R..... 67
Hanson & Van Winkle Co..... 32
Harrington & King Perforating Co..... 62
Hart & Crouse Co..... 20
Hess-Snyder Co..... 14
Hessler, H. E. Co..... 30
Hoffman, Geo. W..... 25
Howes, S. M. Co..... 29
Howson & Howson 67
Hungerford, U. T., Brass & Copper Co..... 79
Incandescent Light & Stove Co..... 34
Independent Register Co..... 26
International Correspondence Schools..... 66
International Heater Co..... 3
Janney, Steinmetz & Co..... 69
Jenkins Bros..... 1
Johnson, E. J. & Co..... 68
Joliet Stove Works..... 8
Josselyn & Co..... 66
Keene, Geo. C. & Co 79
Kelsey Furnace Co..... 36
Kemp, C. M. Mfg. Co..... 33
Kewanee Boiler Co..... 22
Kieley & Mueller..... 1
Koven, L. O. & Bro..... 34
Lalance & Grosjean Mfg. Co.. 67
Lamb & Ritchie..... 33
Lawrence-Letts Elbow Co.... 27
Lennox Machine Co..... 25
Litchfield, J. M..... 67
Littleford Bros..... 75
Livermore, H. F..... 32
McClure & Co..... 80
McLeod & Henry Co..... 1
Magee Furnace Co .....1&10
Marcy Stove Repair Co..... 30
Marlin & Co..... 74
Marston, I. G. & Co..... 32
Mellink Mfg. Co..... 32
Meurer Bros. Co..... 71
Meyer, F. & Bro. Co 23
Michigan Stove Co.....4&5
Millar, Chas. & Son Co..... 80
Miner & Peck Mfg. Co 29
Montross Metal Shingle Co.... 70
Morgan & Co..... 33
Mueller, L. J. F'ce Co..... 20
Mnnsell, E. & Co..... 28
National Enameling & Stamping Co..... 36
National Pipe Bending Co.... 24
New Haven Novelty Machine Co..... 33
Newton, Wm. M..... 1
New York Iron Roofing & Corrugating Co..... 71
New Orleans Rfg. & Metal Works..... 73
Niagara Machine & Tool Wks. 77
Nickel Plate Stove Polish Co. 31
Noyes & Nutter Mfg. Co..... 24
O'Halloron & Jacobs..... 68
Ohl, Geo. A. & Co..... 78
Osborn, J. M. & L. A 73
Ostrander, W. R. & Co..... 76
Peck, Stow & Wilcox Co..... 77
Perkins, J. L. & Co 30
Phila. Machine Tool Co..... 79
Pierce, Butler & Pierce Mfg. Co..... 25
Pittsburgh Stove & Range Co 14
Portsmouth Stove & Range Co. 11
Presbrey Stove Lining Co..... 30
Rasner & Dinger..... 75
Rathbone, Sard & Co.....12&13
Reeves Mfg. Co..... 70
Rhodes, L. E. Co..... 23
Richmond Stove Co..... 11
Ringen Stove Co..... 7
Robinson, J. M. & Co..... 79
Rochester Radiator Co..... 28
Rutland Fire Clay Co..... 31
Sackman, F. A..... 67
Safety Furnace Pipe Co..... 27
Salem Nail Co..... 69
Sanborn, John..... 73
Sannders', D. Sons..... 32
Schaffer, John P..... 26
Schneider & Trenkamp Co.... 6
Schratwiesers Metal Lath Works..... 73
Schwab, R. J. & Sons Co..... 22
Schwerdtle Stamp Co..... 67
Seavey Mfg. Co.....67&68
Shepard, Sidney & Co..... 34
Sheppard, Isaac A. & Co..... 1
Silver & Co..... 67
Smith, H. B. Co..... 17
Smith & Anthony Co..... 80
Smith & Thayer Co 20
Smith-Warren Co..... 70
Special Notices..... 66
Sperry, D. R. & Co..... 67
Stamford Foundry Co 25
Stanton Heater Co..... 15
Stiles & Parker Press Co..... 78
Stocking, E. B..... 67
Stolz, Frank D..... 24
Stover Mfg. Co 28
Stuber & Kuck..... 28
Swaine, F. J. Co..... 77
Taylor Co., N. & G..... 80
Toledo Mch. & Tool Co..... 76
Townley, H P. 66
Trimont Mf'g. Co..... 84
Troy Nickel Works..... 80
Tubular Heating & Ventilating Co..... 18
Union Mfg. Co..... 78
Valentine, M. D. & Bro. Co... 80
Vance Boiler Works..... 24
Vanderman Plumbing & Heating Co..... 84
Vedder Pattern Works..... 29
Vogel, William & Bros 68
Vulcan Metal Refining Co.... 66
Vulcan Western Co..... 66
Washburne, E. G. & Co.....69&77
Wayne, Anthony Mfg Co.... 68
Weir Stove Co..... 80
Wheeler, W. A..... 76
White-Warner Co..... 9
Willis Mfg. Co..... 70
Wister, L. & R. & Co 80
Wood & Bishop Co..... 25
Wood, Alan Co..... 78
XXth Century Heating & Ventilating Co..... 21
Young, Jos. H..... 32
Zero Valve & Brass Mfg. Co.. 32
Zucker & Levett & Loeb Co.. 34

PERFORATED METALS

STEEL, IRON, COPPER, ZINC, BRASS, TIN, and all other metals PERFORATED AS REQUIRED for

Grain Cleaning and Mining Machinery, Woolen, Cotton, Paper and Pulp Mills, Rice, Flour and Cotton Seed Oil Mills, Sugar and Malt Houses, Distilleries, Filter Presses, Stone, Coal and Ore Screens, Brick and Tile Works, Filters, Spark Arresters, Gas and Water Works, Oil, Gas and Vapor Stoves, Coffee Machinery, &c., &c.

Standard Sizes Perforated Tin and Brass Always in Stock.

The Harrington & King Perforating Co.,

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SEE ALPHABETICAL INDEX, PAGE 62.

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SEE ALPHABETICAL INDEX, PAGE 62.

THE METAL WORKER.

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232, 234, 236 and 238 William Street, NEW YORK. 805 Fisher Building, CHICAGO.

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AUSTRALIAN OFFICES: Melbourne, Hardware Chambers, 231 Elizabeth Street; Sydney, Paling's Buildings.

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Newsdealers or Booksellers in any part of the world may obtain *The Metal Worker* through The American News Company, New York, U. S. A.; The International News Company, New York, U. S. A., and London, England; or The San Francisco News Company, San Francisco, Cal., U. S. A.

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LABOR EXCHANGE.

Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

At once, a good all around PLUMBER and TINNER; to one who does not use tobacco and can do my work will pay $2.50 per day; steady work. Geo. W. Gibney, Pawling, N. Y. July 13

Experienced SUPERINTENDENT; one who is capable of estimating cornice, skylights and hot air furnace work and a first-class designer; state experience and salary wanted. Dowman Mfg. Company, Atlanta, Ga. July 13

A first-class CORNICE MAKER, CUTTER and ESTIMATOR as working foreman in sheet metal, furnace and tin work; one who understands all the branches of the business and not afraid to work; this is a good job for the right man; state age, experience and wages desired; must be temperate. "Working Foreman," care *The Metal Worker*, New York. July 13

Wanted at once, two good TINNERS, one for general outside work and one for cornice work; good wages and steady work, eight hours per day. Geo. Rome & Co., Carnegie, Pa. July 13

Young man of one or two years' experience at tinsmithing who wishes to complete trade; man of intelligence and energy only wanted; state experience. Hoover Bros., Milroy, Pa. July 13

One first-class SLATE ROOFER; one who is up to date and a hustler; wages $3 per day; eight hours' work; steady work year round. A. W. Burdick & Co., Memphis, Tenn. July 13

A good STEAM FITTER and PLUMBER; state wages and experience. A. J. Kennard, Roanoke, Va. July 13

An all around TINNER; in and outside work, roofing, plumbing and furnace work; must be sober; steady work for the right man; state wages. Box 236, Stockton, Ill. July 13

An experienced TINNER with some knowledge of slating. I. J. Dickson, Washington, Pa. July 13

A steady, sober TINNER, good for all kinds of job work in a town of 1800; steady job for the right man. B. S. Magill & Son, Tidioute, Pa. July 13

A TINSMITH who understands hot water heating to work in a city of 15,000 near Boston; man must be less than 40 years old, strictly temperate and active; steady job to right man; send references where worked five years or more and state wages wanted. W. H. Hill, 36 Union street, Boston, Mass. July 13

An all around TINNER; one that is used to general repair work, gutters, spouting, &c.; steady job for the right man. Grant Hardware Company, 529 Hampshire street, Quincy, Ill. July 13

SUPERINTENDENT for enameling and stamping factory located in Pennsylvania; a good positon is open for an experienced man, competent to direct all departments in small factory and secure results. "A. S.," care *The Metal Worker*, New York. July 6

Practical PLUMBER who understands tinsmithing also; steady work and good wages paid the right man. B. Ungrodt, Washburn, Wis. July 6

FOREMAN in pieced tinware department who understands every detail of manufacturing and the economical management of help. Address, stating experience, when and where, age, nationality, reference and wages expected, S. C. Harvey, 21 Bellevue, Beacon street, Boston. July 6

First-class PLUMBER who can do tin work; steady employment; country town. "X. Y. Z.," care *The Metal Worker*, New York. July 6

SITUATIONS WANTED.

Journeyman PLUMBER, first-class mechanic, desires work out of town. F. Schaefer, 307 East Eighty-fifth street, New York. July 13

By an ENAMELER as superintendent or foreman; can produce sheet steel or cast iron wares successfully. "Enameler, 711," care *The Metal Worker*, New York. July 13

By young man as HELPER in an up to date plumbing establishment; had two years' experience and would like to finish learning the trade; can furnish best of references as to ability and honesty. Lock Box 171, Cohoes, N. Y. July 13

As SALESMAN, by gentleman thoroughly acquainted, who for the past six years has called on the jobbing stove and large department store trade in the East and Middle West; would accept position with manufacturer making specialty and visiting the jobbing hardware and department store trade in above territory; best of reference. "Reliable," Box 1904, Jackson, Mich. July 13

A young man of correct habits is open for a permanent engagement; has had 12 years' experience at stove and tin work; references and testimonials can be furnished to prove he is worthy and reliable; good reasons for changing. "Abstainer," care *The Metal Worker*, New York. July 13

PLUMBING; FOREMAN wants a position with a first-class firm where his services would be credited; thoroughly competent upon plans and specifications; can take full charge of any sized job or jobs in every particular; up to date; can handle men to an advantage; 25 years' experience; steady; references; no cheap job; member U. A. Brotherhood Plumbers' Association. "B. C. F.," 534 West Thirty-fifth street, New York. July 13

By a first-class PLUMBER and GAS FITTER; can figure and work from plans; have had 16 years' experience and can furnish best of reference as to honesty and sobriety; $3 a day salary. W. M. Sutton, 241 State street, Hartford, Conn. July 13

By first-class SOLDERER or ELECTRO PLATER; four years' experience as solderer and two years as plater; strictly temperate, honest and reliable; steady work desired. J. Siebert, 3935 Third avenue, New York. July 13

By a first-class PLUMBER; city or country; references. "W.," care *The Metal Worker*, New York. July 13

As FOREMAN or ASSISTANT SUPERINTENDENT, by a first-class workman; strictly temperate, honest and reliable; 15 years' experience, two years as foreman; understands hot air furnace or stove work; steady work. J. H. Brown, 1368 Brook avenue, New York. July 13

TINSMITH desires steady work; 20 years' experience; best references; can handle men to advantage. Box 118, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. July 13

First-class PLUMBER wishes a steady position in any part of the United States; can furnish A1 reference. James P. Goodsill, care C. P. Erlenbach, 210 East Fifty-seventh street, New York. July 13

Boy 16 years, willing to learn the plumbing or tin and sheet iron trade; a graduate of public school; best of references; city only. David Block, 29 Canal street, New York. July 13

As PLUMBER and GAS FITTER; nine years' practical experience in a general line of plumbing; reference. John J. Mullen, 80 Ellison street, Paterson, N. Y. July 13

By SLATE and TILE ROOFER; 15 years' experience. C. E. White, Atlantic Highlands, N. J. July 13

By TINSMITH of 12 years' experience; good all around man; sober; good references; steady position desired; married; 34 years of age. "P.," 105 Fair street, Brockport, N. Y. July 13

SALESMAN for Louisiana or Southern Texas desires connection with a first-class firm handling hardware, mill supplies or stoves; has had 12 years' experience. Box 123, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. July 13

A young man of good habits desires position in a first-class retail hardware store doing a prosperous business in a good town, where business can be learned and an interest obtained or entire stock purchased; Northern and Central Ohio preferred; gilt edge reference. Box 122, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. July 13

As TRAVELING SALESMAN in the stove, heater and range line, also gas and oil stoves; am well acquainted, active and reliable; best of reference; territory covered, Pennsylvania, Delaware, Maryland, Virginia, New Jersey; or as bookkeeper and salesman. H. Harfield, 2025 Ridge avenue, Philadelphia, Pa. July 13

By a practical PLUMBER, GAS and STEAM FITTER; steady, sober, industrious; with 14 years' experience; neat and quick and can estimate from plans and capable of taking charge of work. John Costello, plumber, General Delivery, Watertown, N. Y. July 13

By the year with some responsible firm as SUPERINTENDENT or HEAD FOREMAN; can run large works; quick, neat, accurate and up to date workman; understand the working, drawing and making of dies for forming various shapes of all kinds of sheet metals; am first-class tin and sheet metal worker by trade; can furnish best references; wages $1300 a year; age 27, married; willing to go anywhere. Frank Allers, 44 Forrest street, Jersey City, N. J. July 13

By a strictly first-class PLUMBER and GAS FITTER, with knowledge of steam and hot water; city or country. J. M. Gleason, General Delivery, Philadelphia, Pa. July 13

By first-class CORNICE, SKYLIGHT, TIN and SHEET IRON WORKER, also CUTTER, within a radius of about 45 miles from New York City Hall; New York, Brooklyn and Jersey City preferred. "Cornice Maker," care Mr. Pitkind, 83 Henry street, New York. July 13

By CORNICE, SKYLIGHT, HEATING and VENTILATING FOREMAN of ability; A1 in every respect; best of references; none but big firms which like to do fine and correct work shall answer. "Able Foreman," care *The Metal Worker*, New York. July 13

By a first-class TIN and SHEET GALVANIZED IRON WORKER; 20 years' experience; can do roofing and plumbing; steady work wanted. Miller, janitor, 430 West Fortieth street, New York. July 13

By a Boston PLUMBER; first-class LEAD or BRASS WORKER; can do furnace, low pressure steam, hot water and general all around work; a steady place wanted; can work or figure from plans, take charge of men and do a good day's work; sober and good calculator; 18 years' experience; 37 years old; single, and first-class references. J. A. Reber, Cranford, N. J. July 13

PLUMBER and STEAM FITTER would like a steady position; city or country. Chas. Doeliner, Hicksville, L. I., N. Y. July 13

CORNICE MAKER; a good bench worker who is a capable cutter and estimator; a young man, 13 years' experience, sober and reliable, wishes a position in New York or vicinity. "Cornice Maker," 79 Morton street, New York. July 13

By a first-class man as SUPERINTENDENT of factory making enameled ware or stamped and pieced tinware. "M. S.," care *The Metal Worker*, New York. July 13

Practical PLUMBER wants work; city or country; references; wages moderate. Joseph Fitzpatrick, 224 East Fifty-sixth street, New York. July 13

By a young man who understands GAS, STEAM and HOT WATER PLUMBING; wages moderate with chance of advancement. "A. W. H.," 323 Cherry street, Clearfield, Pa. July 13

By a young man with four years' experience in a country shop; will give reference or trial. B. T. Ebbets, Oyster Bay, L. I. July 13

A first-class PLUMBER wishes steady work in city or country. Thomas McSpedon, 328 East Sixtieth street, New York. July 13

By TINSMITH and TIN SHEET IRON WORKER; good bench hand; understand all kinds of jobbing; in fact, am all around man; city or country, city preferred. L. Miekenberg, 27 Seigel street, Brooklyn, N. Y. July 13

A good all around TIN and SHEET IRON WORKER; 15 years' experience; for in and outside work; German and speaks English; married; only for New York and Jersey City. August Schneider, 201 Fifth street, Jersey City. July 13

By a first-class PLUMBER and GAS FITTER; a neat, quick and up to date mechanic, capable of doing all work pertaining to the trade of a plumber; strictly sober and reliable; will go to work in any city or village; a month on trial; correspondence solicited for steady position. "Practical Plumber," 26 Brainard street, Watertown, N. Y. July 13

By a first-class mechanic as SUPERINTENDENT of factory or master mechanic of factory manufacturing a full line of sheet metal goods; 20 years' experience; reference. "Superintendent," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. July 13

By a first-class PLUMBER and GAS FITTER who is thoroughly competent and reliable; understands plans and can lay out work; also has good practical knowledge of steam and hot water fitter; work must be steady; wages $3 per day; 12 years' experience; married; strictly sober; first-class reference; Connecticut or Massachusetts preferred. "Steady," care *The Metal Worker*, New York. July 13

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On account of death of proprietor I wish to sell a small Piumbing, Tinning and Furnace business. In a good location. The late proprietor had established a good business and this is a first-class opening for one wanting to start in business on a small scale. Price $275 Address

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Good as new, almost a full set of Tinners' Tools at a very low price. One 32 in. Peck, Stow & Wilcox Sq. Shears. One 30 in. Tin Folder etc. For full particulars address

ANTHONY SNYDER,
New Philadelphia, Ohio

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A complete set of Tinners' Tools, including Squaring Shears. The entire outfit is in good condition and will be sold at a sacrifice as the owner has no use for same. Address

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One lot of Piping tools, including Vises, Die Stocks, Taps, Dies, Wrenches, etc. For list and price address EDW. DOW, Lock Box 257, Laconia, N. H.

TINNING, PLUMBING, HEATING and GENERAL JOBBING, STOVE and STOVE REPAIR BUSINESS for sale. Established 1865 by present owner. 25 years at present stand. For information address ROBERT DUNCAN, 296 Main St., Paterson, N. J.

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Nearly new three-story brick building, 50 x 100 ft, heavy mill construction; engine, boiler, elevator, steam heat; 10 acres; track connections; Chicago freight rates. In manufacturing city of 16,000 Northern Illinois. Must be sold Address "N. I. B.," care *The Metal Worker*, New York.

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For particulars see *Metal Worker* of June 8, page 23, and address

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Cambridge, Mass.

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Stock of hardware, tinners' tools, &c., all first class, at cost. In good dairy country—will invoice about $2,000. Store for sale or rent. Tinner can work all the time.

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At a bargain. A well established Steam and Hot Water Manufacturing Boiler business, making six sizes of boilers. Will sell patent rights also. A grand chance for any one having small capital. Address

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Care *The Metal Worker*, New York.

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Roofing and Cornice Shop with plenty of tools. Cheap for cash.

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Modern Steel Range Plant in Northern Ohio Brick Foundry 66 x 150, cupola addition 16 x 30, 30 ton cupola. Other buildings, one brick 30 x 144 one frame 28 x 133, one metal covered 25 x 85. Private siding 330 feet long connecting with four railway lines Address

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DECISION OF THE UNITED STATES CIRCUIT COURT

SUSTAINING

Lalance & Grosjean Mfg. Co.'s Label.

This Label was originated and is used by us to distinguish our ABSOLUTELY PURE

Agate Nickel-Steel Ware

from other goods, containing either

ARSENIC, LEAD OR ANTIMONY

in the enamel coating.

The Court, limiting its decision to the use of the label only, rules as follows, under date of April, 15, 1901: "Complainants may take a preliminary injunction against the use of the labels, Exhibit G (of the ***National Enameling and Stamping Co.***) or of any similar labels, which by the collocation of size, colors, shape, spacing and lettering may present as close a resemblance to complainants' label Exhibit F (see copy of label adjoining) as do the said labels. Exhibit G (on Granite Ware)."

Notice to the Trade:

The trade is hereby notified that any sales of the so-called "Granite Iron or Steel Ware" under labels like our rectangular labels referred to in above decision, is a direct infringement of our rights as established by the above adjudication and entitles us to claim damages.

Notwithstanding reports to the contrary, we are ***NOT*** members of any "Trust" or "Association," nor have we entered into any "Gentlemen's Agreement" regarding prices on Tinned, Galvanized, Japanned or Enameled Wares, or any other goods we manufacture.

LALANCE & GROSJEAN MFG. CO.,

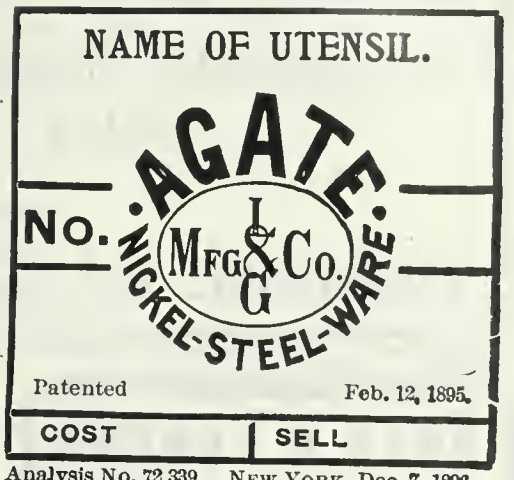
CHICAGO. NEW YORK. BOSTON.

This is a copy of the LABEL, which is printed on BLUE paper and pasted on each piece of GENUINE

AGATE NICKEL-STEEL WARE

as a guarantee of

ABSOLUTE PURITY.



Analysis No. 72,339. NEW YORK, Dec. 7, 1896.

We have made a careful examination of a sample of "Agate Nickel Steel Ware" received from The Lalance & Grosjean Mfg. Co., Nov. 30, 1896.

The enamel coating is homogeneous, of extra thickness, and great purity.

It is *entirely free from arsenic, lead* and *antimony*—metals so often found in enameled goods.

Very respectfully,
STILLWELL & GLADDING,
Chemists to the New York Produce Exchange.

Pierre de P. Ricketts, E.M., Ph.D. John H. Banks, E.M., Ph.D.

Analysis No. 14,180. NEW YORK, May 5, 1897.

LALANCE & GROSJEAN MFG. CO.

GENTLEMEN:—As requested by you, we purchased in the open market a sample of "Agate Nickel Steel Ware" and have made a careful chemical analysis of the enamel covering of the same.

We find this enamel is *absolutely pure* and *free from Arsenic, Antimony, Lead* and *other substances injurious to health.* We can therefore recommend it for all culinary and drinking purposes. Respectfully yours,

RICKETTS & BANKS,
Chemists to the N. Y. Metal Exchange.

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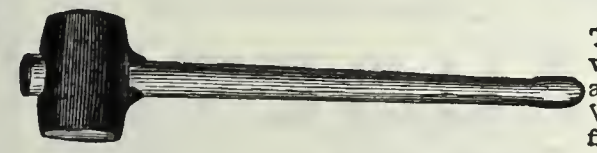
SPERRY'S MAULS....



This Post Maul was original with us. Imitations are made all over the United States. WE MAKE THEM RIGHT, from specially selected Pig Metal. One will do the work of a half dozen of the scrap-iron variety. If your Jobber does not give you Sperry's, order from us.

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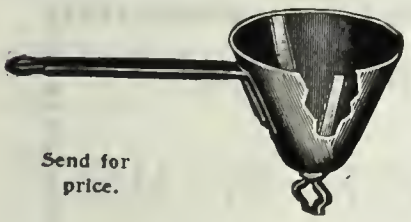

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PATENT PRACTICE EXCLUSIVELY.
References Furnished on Application.

E. B. STOCKING, Attorney at Law,
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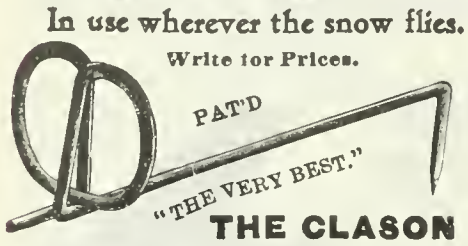

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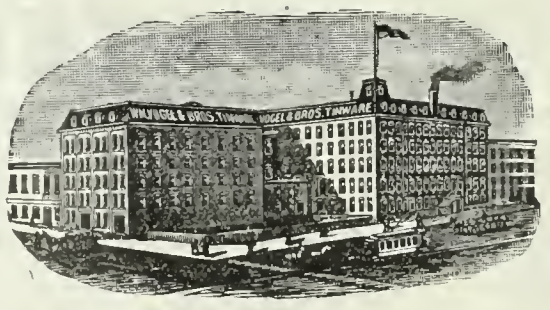

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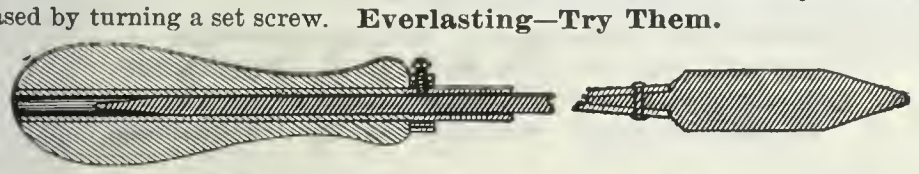

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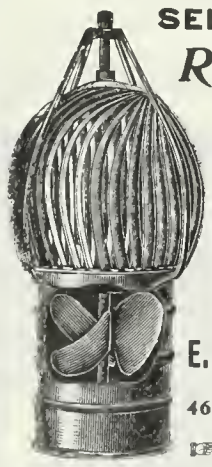

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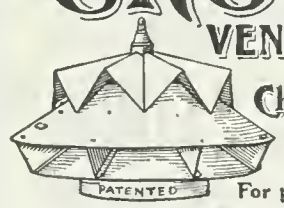

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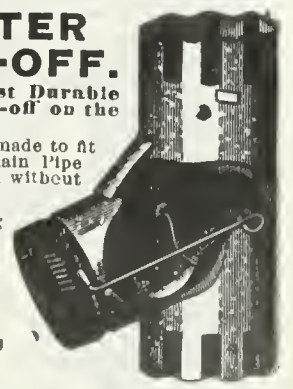

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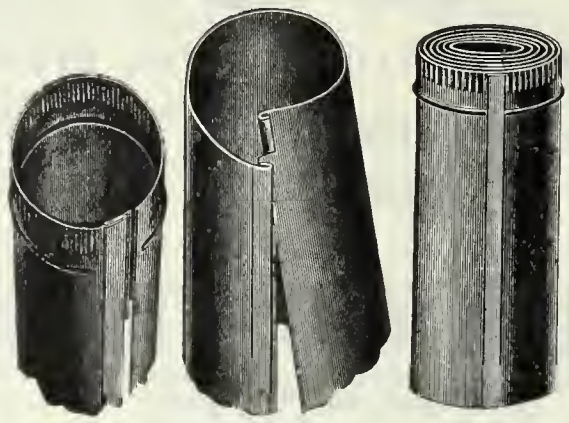

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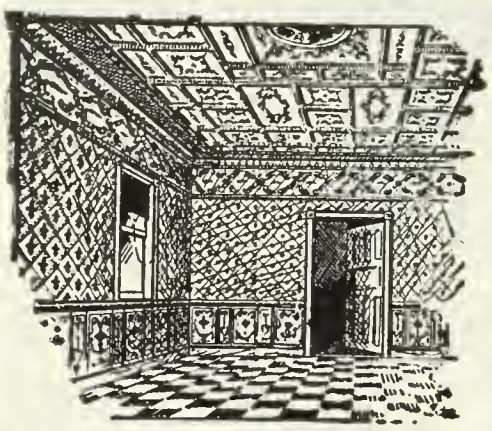

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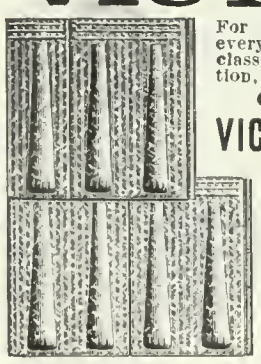

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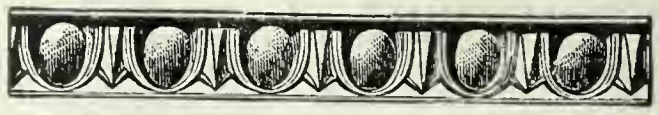

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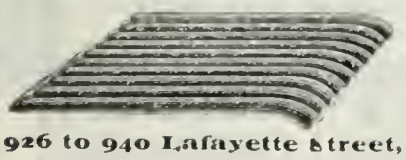

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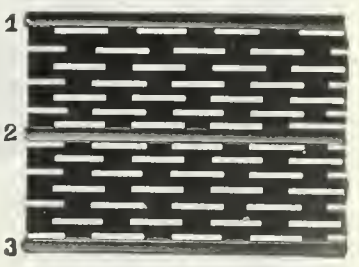

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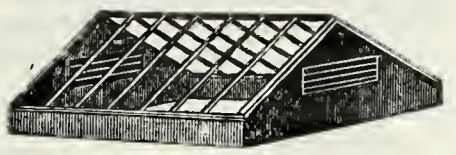

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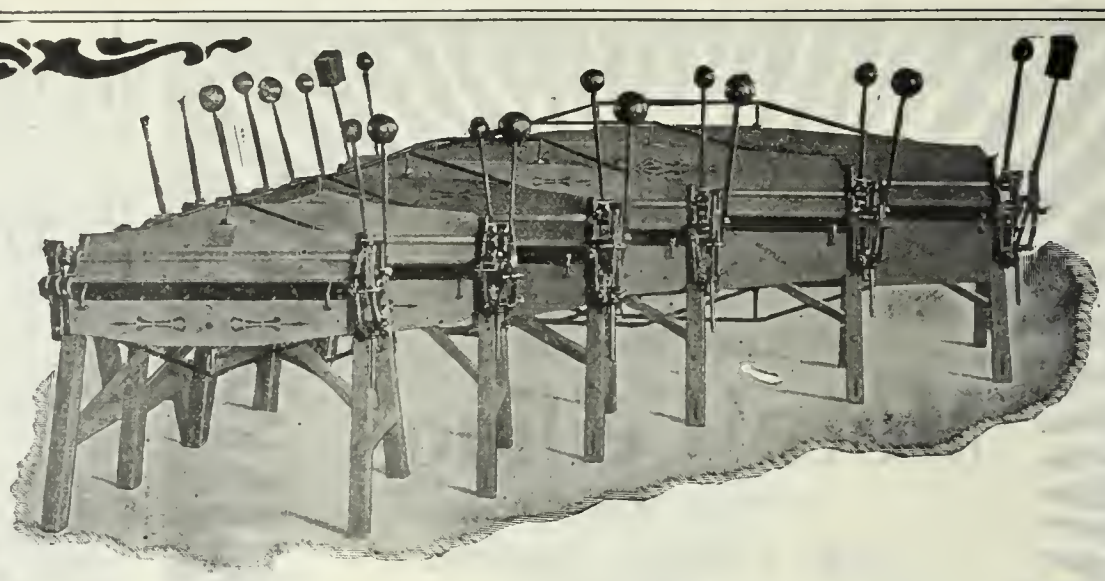

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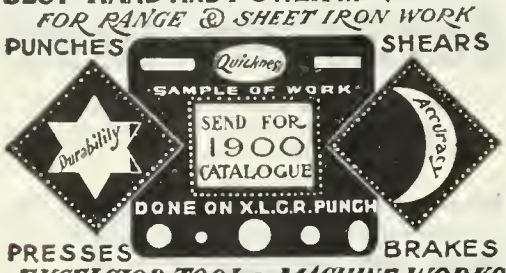

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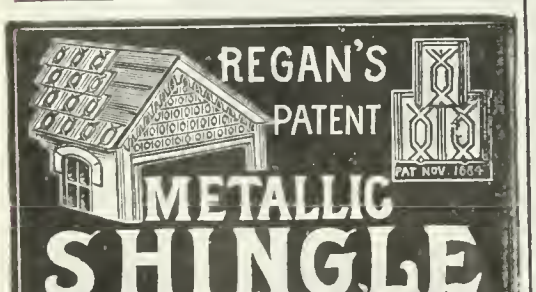
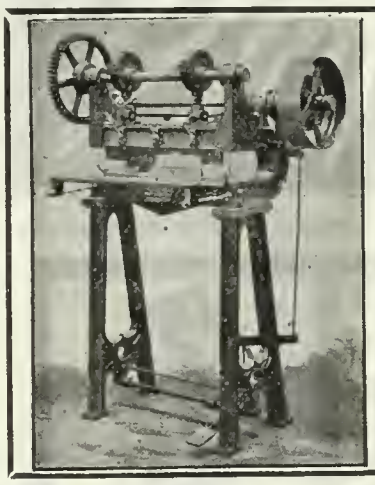


MADE OF TIN PAINTED OR GALVANIZED
ANY ONE CAN LAY THEM. FOR FURTHER PARTICULARS, PRICES, ETC, ADDRESS THE MANUFACTURERS.
THE CINCINNATI STAMPING CO.
CINCINNATI, O.



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NINTH and SAXTON STS., CANTON, O.

Designers and Builders of

Sheet Metal Machinery, Eave Trough and Conductor Pipe Machinery.

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We build complete equipments and control the latest patented machines for this work.

TIN CAN MACHINERY.

We make the very latest improved machinery for manufacturing cans and pieced tinware.

STEEL RANGE MACHINERY.

Recognized leaders for machinery and dies for oil and gas stoves, and gas and steel ranges.

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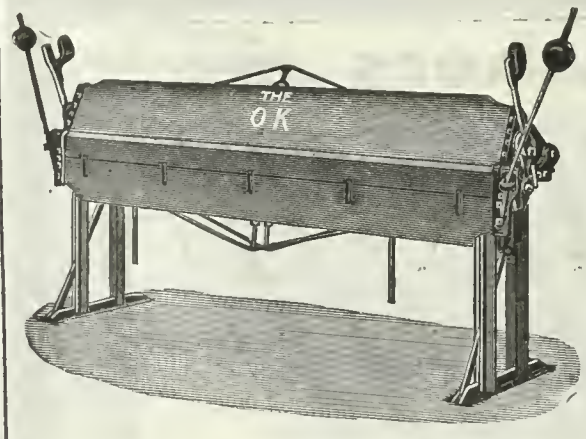

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PRICES FOR OUR REGULAR SIZES:

No.	Gauge it will Form Full Length.	Length on Forming Edge.	Price.
1	16	12 ft. 1 in.	$300
2	16	10 ft. 1 in.	225
3	16	8 ft. 1 in.	150
4	22	8 ft. 1 in.	100
5	12	4 ft. ½ in.	75
6	16	4 ft. ½ in.	60
7	22	4 ft. ½ in.	50

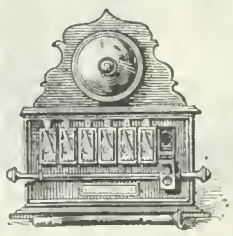
Formers on cornice brakes included.

Discount and particulars on application.
Brakes for steel range work or other specialties to form up material from 10 gauge up.

Dreis, Andrews & Krump,

Successors to O. K. MFG. CO.,

3039 & 3041 South Halsted Street, CHICAGO, ILL.



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Manufacturers of

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Complete outfits of Speaking Tubes, Whistles, Pneumatic Bells, &c. A full line of Speaking Tube Hardware constantly on hand. Factory, DeKalb Ave., near Knickerbocker, Brooklyn, L. I.

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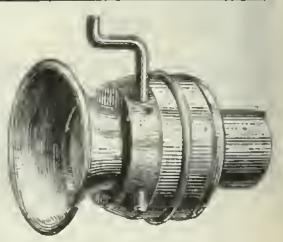

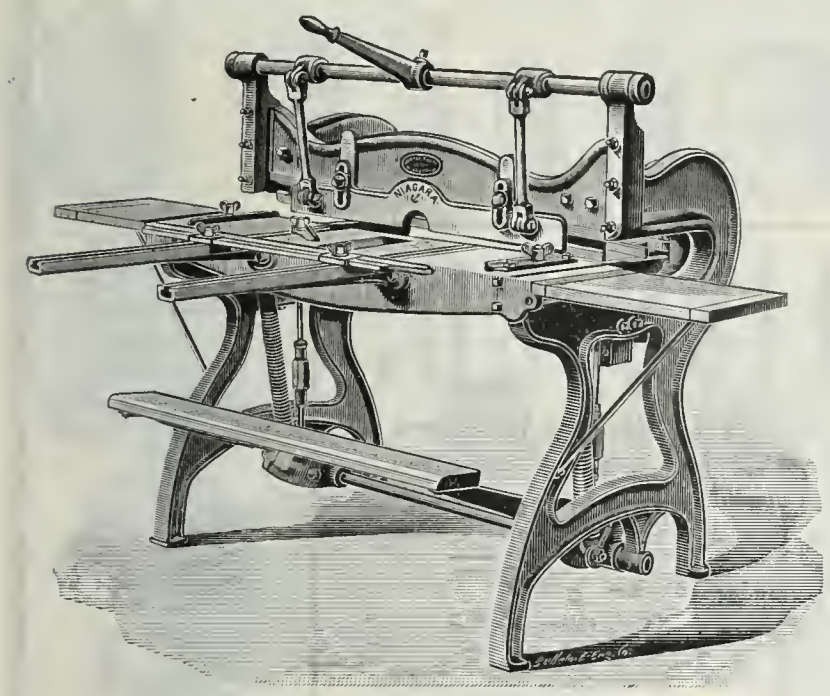

30, 36, 42 and 52 inches long.

NIAGARA FOOT GAP SHEARS.

For No. 16 Iron and Lighter.

These shears have a 15 or 18 inch gap, which permits of cutting sheets of unlimited length up to 15 or 18 inches from the edge. The actual cutting length is about one inch more than the nominal size, and the housings are far enough apart that sheets in width equal to the cutting length can be passed through from front to back.

. . Manufactured by . .

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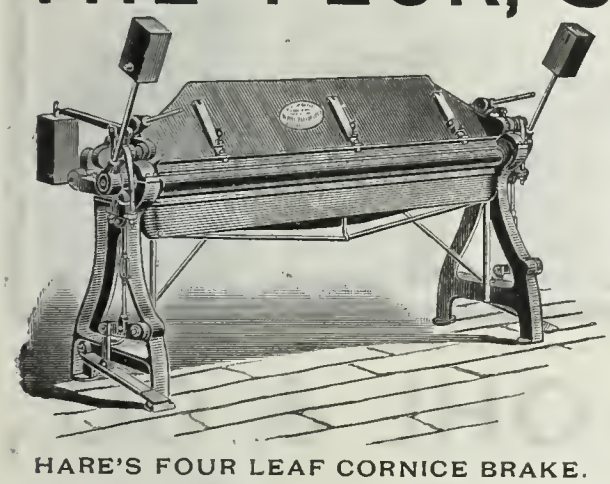
MFRS. OF SHEET METAL TOOLS, BUFFALO, N. Y.

THE PECK, STOW & WILCOX CO.,

New York,
—AND—
Cleveland, Ohio.



HARE'S FOUR LEAF CORNICE BRAKE.

Hundreds sold and **never a complaint.** Works easily and rapidly. The universal verdict is, **IT IS THE BEST IN THE WORLD.**

96 inches long.

Tinsmiths' Tools of the Highest Grade.

Our *Improved Eureka Cornice Brake.* Will bend No 20 iron.

96 inches long.

CORNICE MAKERS' SQUARING SHEARS.
With Lever Arc, Automatic Gauge. Will cut No. 22 iron.
97 inches long.

LARGE STOCK OF

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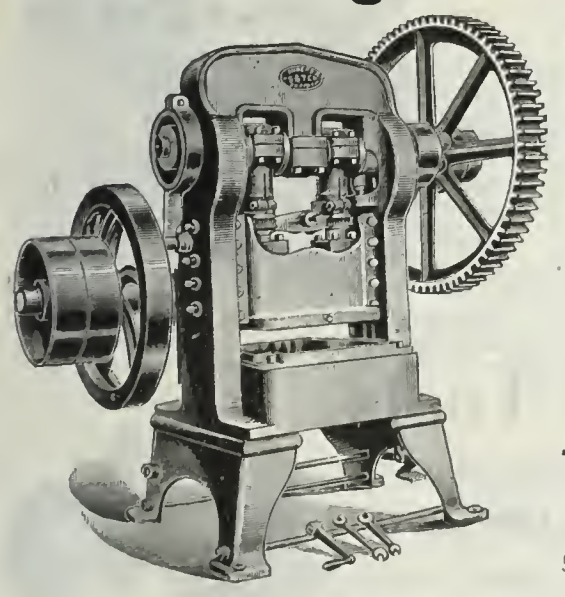

Foot and Power Presses,
Hand Punches and Shears,
Circle and Rotary Shears,
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FOR
Immediate Delivery.

SEND FOR CATALOGUE.

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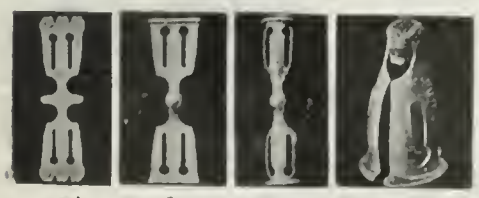
COPPER Lightning Rods ...

Absolute Protection from Lightning is given by use of our continuous copper conductors

E. G. WASHBURNE & CO.,
Telephone, 3125 Cortlandt. **46 Cortlandt St. New York.**
Work put up or material furnished



1st, 2d, 3d, 4th
Operations.

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Special Machinery and Tools.

SHEET METAL STAMPING.

LATEST EQUIPMENT. PROMPT SHIPMENT.
No. 1 Work. Fair Prices.
WRITE US FOR ESTIMATES.

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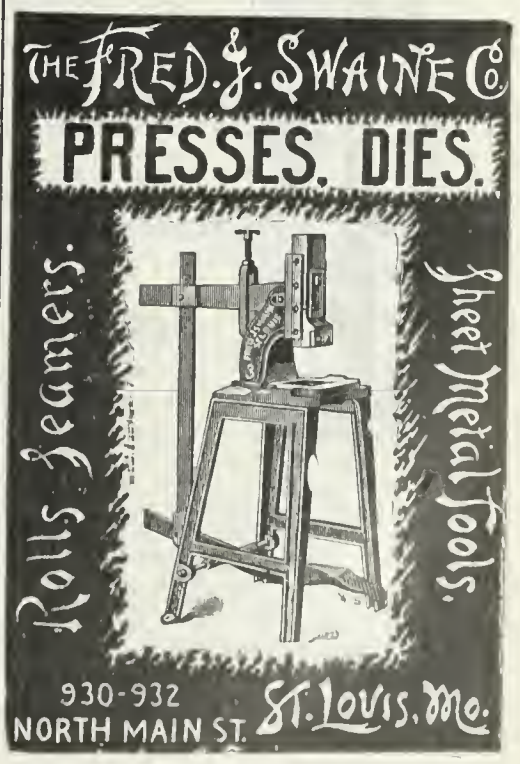


E. W. BLISS CO.,

MAIN OFFICE: 16 ADAMS ST., BROOKLYN, N. Y.

European Headquarters: 12 Ave. De La Grande Armee, Paris, France.

Designers and Builders of Presses, Dies, Shears, Slitters, Double Seamers, Crimpers, etc., etc., for working all kinds of Sheet Metals.

A few of the many articles for which we make the complete machinery for producing are shown in the accompanying cuts.

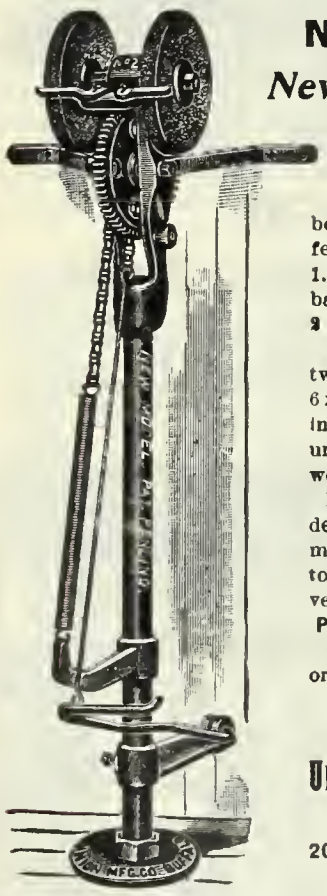
ALSO OWNERS OF **THE STILES & PARKER PRESS CO.**

UNION TOOL GRINDER

NO. 2.

New Model.

PAT. PEND. 1910.)



This machine embodies all the good features of our No. 1. All gear driven, ball ratchet, speed 2 to 4 thousand.

Furnished with two emery wheels, 6 x ¾ steel shaft, 1 in. tubing for column. Shipping weight 35 lbs.

Plumbers, stove dealers and repair men will find this tool a very good investment.

PRICE $8.00, NET.

Ask your dealer or write direct.

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— A SHOPWALKER with rather an awkward gait was leading the way and requesting a lady to "Walk this way, madam." "Thank you," said the lady; "but I consider my style of walking more graceful than yours."—*Tit-Bits.*

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Manufacturers of all kinds of

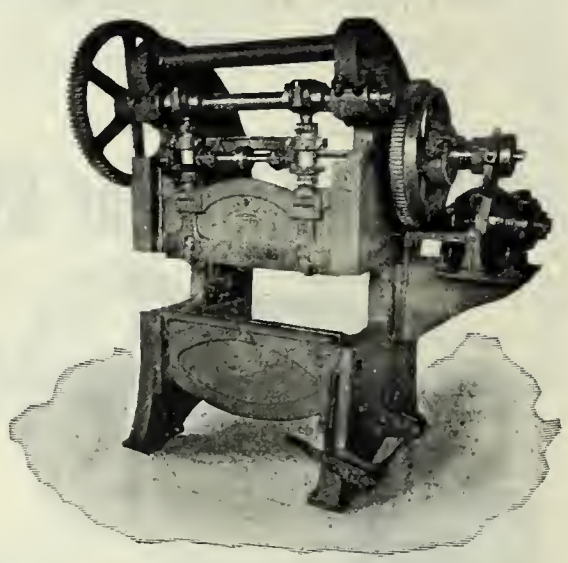
METAL WORKERS' MACHINES.

BRAKES

(ALL SIZES).

Heavy and Light Squaring Shears.

Punches, Presses, Sheet Steel Lath Machines, Drop Presses, Draw Benches, and SPECIAL MACHINERY of all descriptions.



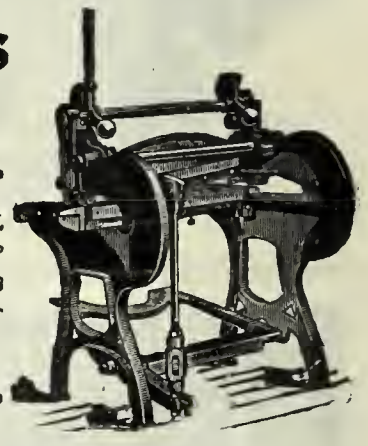
IMPROVED CAP PRESS.

Sheet Metal Tools

For any and all Purposes.

SHEARS, PUNCHES, Etc.

SPECIAL SHEET METAL WORKING MACHINERY FROM SPECIFICATIONS PRODUCED ON SHORT NOTICE.



Write for Prices and Descriptive Circulars.

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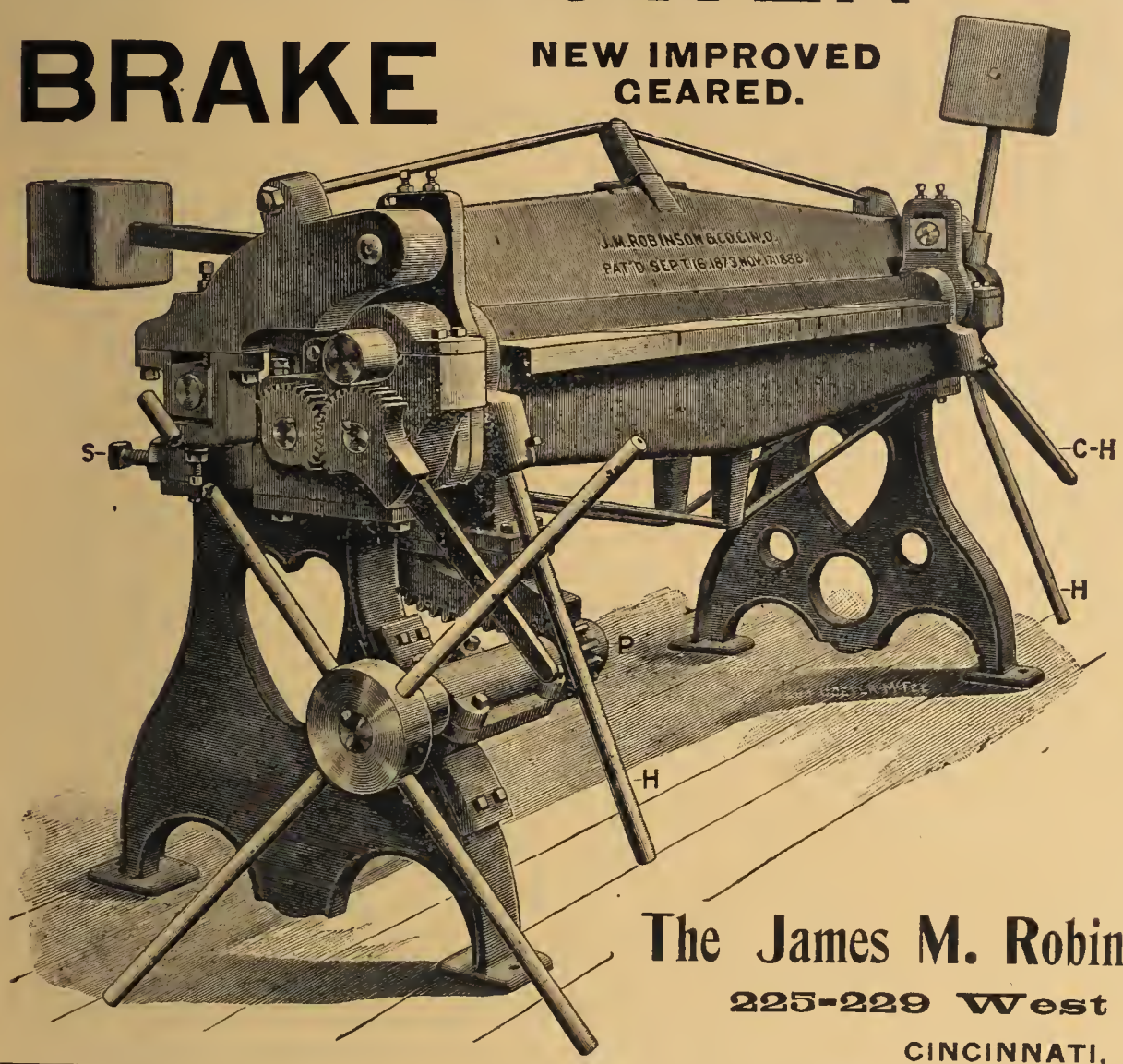
NEW IMPROVED GEARED.



6 AND 8 FOOT.

Will bend No. 14 gauge and lighter, or when double geared with hand power will bend No. 10 gauge in 6 and 8 foot lengths. Write for descriptive circular and prices.

The James M. Robinson Mfg. Co.,
225-229 West 2nd St.,
CINCINNATI, O.

KEENE FOOT POWER
CORNICE BRAKE.

Easiest to Operate, Strongest and Best.

SHEET METAL WORKING MACHINERY OF ALL KINDS.

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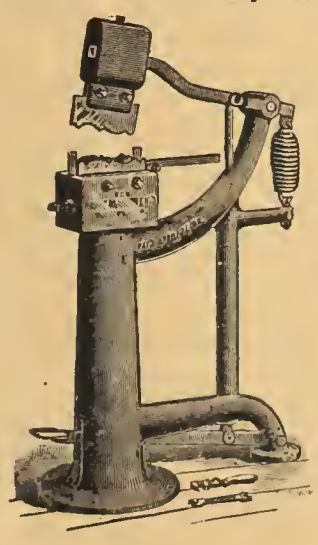
FOOT POWER
CURVE MOULDING HAMMER.

The cheapest, most convenient and best sheet metal moulding former ever offered. Produces a greater variety of work than any other. Quickly adjusted and easily operated. Write for prices and discounts on this or any sheet metal working tool you may desire. We will name you bottom prices.



U. T. HUNGERFORD BRASS and COPPER CO.

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SEAMLESS BRASS AND COPPER TUBING.

All sizes from 1-8 in. to 9 in. diameter.

SHEET COPPER, COPPER BOLT, COPPER NAILS, TOBIN BRONZE SHEETS, CIRCLES, PLATES AND RODS.

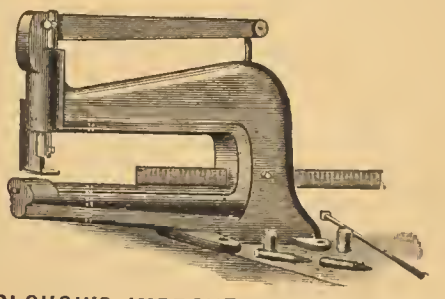
We carry in stock a general line of Brass and Copper in Sheets Rolls, Rods, Wire, Rivets, Nails, &c.

Our large and well-assorted stock (aggregating over 1,000,000 lbs.) enables us to fill orders promptly.

IMPROVED
Patent Automatic Can Body Double Lock Seaming Machines.

COMBINATION
Presses and Dies, Sheet Metal Tools, &c.

W. J. GORDON
218 New Street
PHILADELPHIA, PA.



CLOUGH'S IMPROVED FOOT PRESS,

For Sheet Metal Work. Punches to center of 36 in. sheet or 5 in. pipe, 30 in long. Handiest Press made. Dies and Punches furnished with every Press. Weight about 175 lbs. For Descriptive Circular and Price, address

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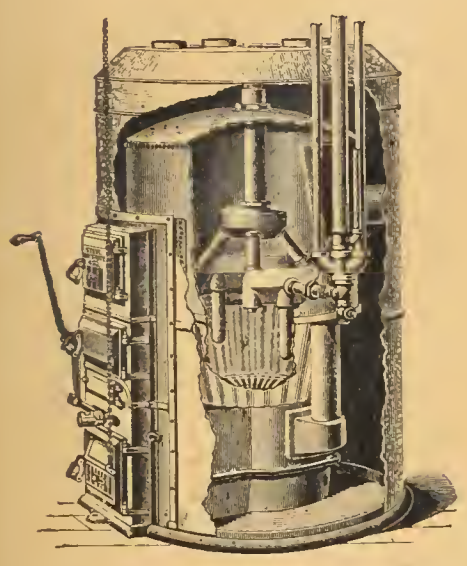
PRESSES & SHEARS
CORNICE MACHINERY, ETC.

An Ideal Warming



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apparatus provides for the introduction and distribution of fresh warm air and can be secured by using a

BAY STATE COMBINATION HEATER.

Manufactured Only by

BARSTOW STOVE COMPANY,

BOSTON, 55 Portland St.,
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Why buy
the "**imitations**"
when you can
get the
Genuine
"**Taylor Old Style**" brand
at such a
reasonable
price?

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Manufacturers of Tinplate,
Established 1810,
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FOR LODGE ROOMS.
Frink's Cluster Reflectors

In a great variety of styles and sizes, meet all the requirements of power, diffusion, and durability more perfectly than any other fixtures; they are consequently most economical.

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Dunbar Foundry Pig Iron.
Dunbar Connellsville Coke for Foundry Use.
American Sheet Iron Co.'s Sheet Iron.
American R. G., cleaned of uniform black color.
Dealers in all kinds of Iron and Steel Scrap.

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CAST IRON PIPE and SPECIALS for WATER and GAS. Also Flanged Pipe and Fittings, Hydrants, Gates, Pig Lead, etc. CHAS. MILLAR & SON CO., Selling Agents, Utica, N. Y. Manufacturers of Lead Pipe and Plumbers' Materials. Wholesale Eastern Agents Akron Vitrified Sewer Pipe.

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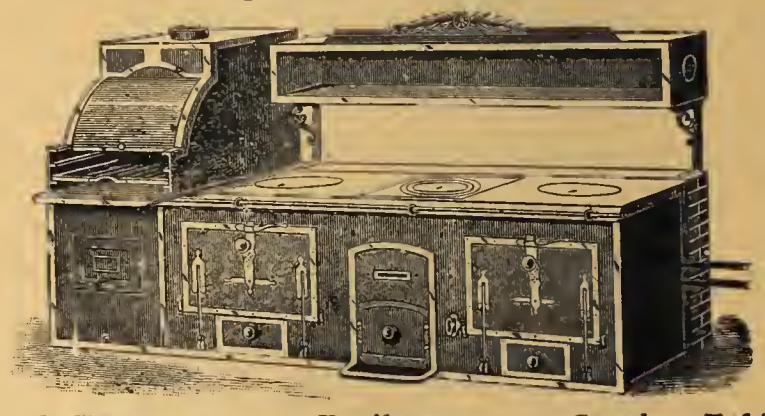
KITCHEN OUTFITS.



French Ranges, Broilers, Carving Tables,
Stock Kettles, Tea and Coffee Sets,

And every requisite for the complete furnishing of any size Hotel or Restaurant Kitchen.

SMITH & ANTHONY COMPANY,

SEND FOR OUR 120 PAGE CATALOGUE. **BOSTON.**

Do You Know

that when it comes to a question of **meritable, taking, well advertised goods,** there is no line made that can compare with the celebrated

GLENWOOD
Ranges and Heaters.

Weir Stove Company, Foundry at Taunton, Mass. } W. S. Ray Mfg. Co., San Francisco, Cal. Jacob Retterer, Chicago, Ill.

INCREASING DEMAND TELLS THE STORY . . .

McCLURE'S GENUINE CHARCOAL IRON REDIPPED ROOFING TIN

McCLURE & CO.

Manufacturers of Tin Plate,

PITTSBURGH, PA. 211, 213 and 215 Second Ave.
PHILADELPHIA, PA. 115 North 7th Street.

Index to Reading Matter, Page 56.

Index to Advertisements, Pages 58 - 60.

The Metal Worker

A WEEKLY JOURNAL OF THE ROOFING, CORNICE, STOVE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

VOL. LVI. NUMBER 3. NEW YORK AND CHICAGO, JULY 20, 1901. ONE DOLLAR A YEAR. SINGLE COPIES 5 CENTS.

Iron Stone Stove Lining.

Fits any Stove.

Plastered in like morter. Gets as hard as brick.

MY FACE ON EVERY BAG.

Prices—$1.60 per doz 10 lb bags in 2 doz lots. $1.00 per doz. 6 lb. bags in 3 doz. lots. ONE CENT per lb. in bulk in Barrel.

Address WILLIAM M. NEWTON, Albany, N. Y.

The Gorton Side Feed Boilers

FOR STEAM AND HOT WATER HEATING.

INVESTIGATE FOR YOURSELF.

Send for Catalogue and Prices.

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STOVE LININGS McLEOD & HENRY CO., TROY, N. Y.

Gray Iron Castings. S. CHENEY & SON, Manlius, N. Y.

To get a good pitch to hot air pipes in the cellar there should be a clearance of at least eight feet. To save money cellars are very often made shallower than this, and the average hot air furnace finishes too high. To meet this condition, install a Paragon Special for low cellars. The 840, with 40 inch casing and 24 inch firepot, finishes up only 5 feet high. Another evidence of the completeness and adaptability of the Paragon line.

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NEW YORK PHILADELPHIA BALTIMORE

The businessman looks
o his costs all round;
he mere galvanized-
on worker, perhaps,
ay like to pay wages—
he more the merrier.

American Sheet Steel Company
Battery Park Building
New York

Steam Specialties.

RELIEF and NOISELESS BACK
ELEVATOR VALVES, PRESSURE VALVES,
STEAM TRAPS, PUMP GOVERNORS,
STEAM AND WATER STEAM and OIL SEP-
REDUCING VALVES, ARATORS,
SINK TEMPERATURE CONTROLLER and
AIR No. 1 DAMPER REGULATORS

KIELEY AND MUELLER,
17 W. 13th St., - NEW YORK.

WHAT we said about that turkey being roasted in a Grimm Steel Range is true, every word of it. Will you order a sample and be convinced? The Grimm Steel Range is better than the ordinary run of steel ranges. If not, return at our expense.

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Sold to dealers only. Ask for catalogue.

THE DIGHTON FURNACE Page 16.

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GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.

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Jenkins Bros.' Valves

are manufactured of the best steam metal, and are fully guaranteed. Why experiment with cheap valves? If you want the *BEST* ask your dealer for valves manufactured by Jenkins Brothers. Remember all genuine are stamped with Trade Mark like cut.

JENKINS BROTHERS, New York, Philadelphia, Chicago, Boston.

FOLLANSBEE BROTHERS CO.,
328 330-332 Second Ave.,
Apollo B. B. Galvanized Sheets.

Sheet Copper shipments made promptly from mill, or Pittsburgh stock at the lowest market prices.

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The number of dealers handling Magee Ranges & Heaters increases every Year Why?
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RANGES & HEATERS
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BOSTON

ROUND OAK
STANDARD OF AMERICA

CVRTIS GANDY DEL CHICAGO 1901

Round Oak Good Ranges
ARE good ranges.
We make them good—
heavy, solid, substantial—
and most carefully fitted.
We believe it is
just as

Essential to grind and fit each door and draft

on a Range as on
the famous
Round Oak
Heating Stove.
We sell them at a
reasonable price.
They will surely
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If you are "looking"
or "laying plans"
send to us for
"Some Good Things
for the Kitchen."

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MAKERS OF GOOD GOODS ONLY.

29

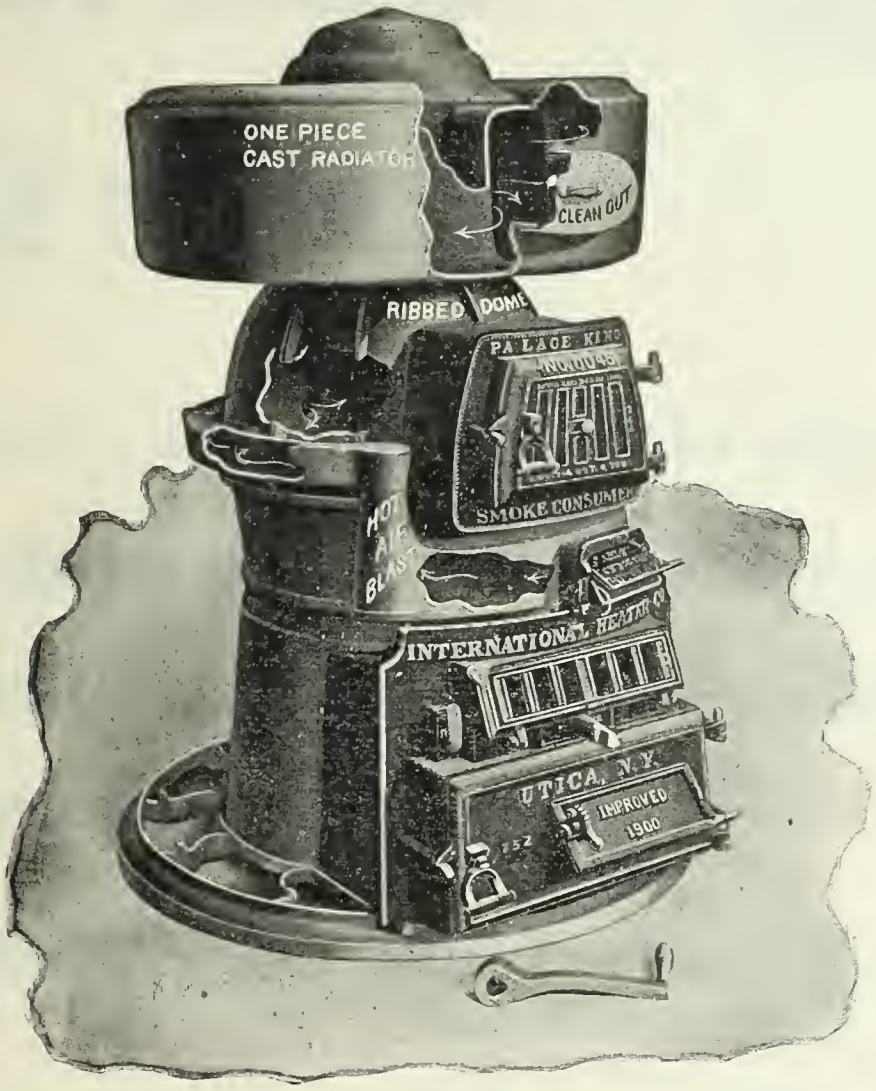
HB

New Palace King Hot Blast

SMOKE CONSUMER

WARM AIR FURNACE.

FOR SOFT COAL.



A heavy, substantial, all cast iron and strictly high grade Heater; especially constructed for soft coal fuel.

THE HOT AIR BLAST APPLIANCE

Is so formed that the distribution of the hot air to the combustion chamber is equally divided at three points :—at the back and on each side This appliance embodies the important advantage of a hot air blast and also the very vital point of a durable construction. This question of durability of a hot blast appliance for soft coal fuel is one that has caused much annoyance and expense, and in this construction we have carefully provided for this important point. It is not a part of the combustion dome or fire-pot, insuring equal expans on and contraction. The air is discharged into the combustion chamber directly over the surface of the fire and at a very high temperature, yet the construction is such that the combustion does not come in direct c ntact with it ; the parts are allowed to expand and contract equally.

International Heater Co.,

Largest Makers of Heaters in the World.

UTICA, N. Y.

NEW YORK, BOSTON, CHICAGO, DENVER.

PARIS—GOLD MEDAL—1900.

GARLAND STOVES AND RANGES
"The World's Best"

Nothing t
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New Models of Steel Ranges.

New Models of Steel Cooking Stoves.

New Models of Base Burners.

New Models of Sheet Iron Hea

New Models of Sheet

More New and Desirable Patterns

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ron Heaters for Wood (Air Tights).

han have ever before been offered.

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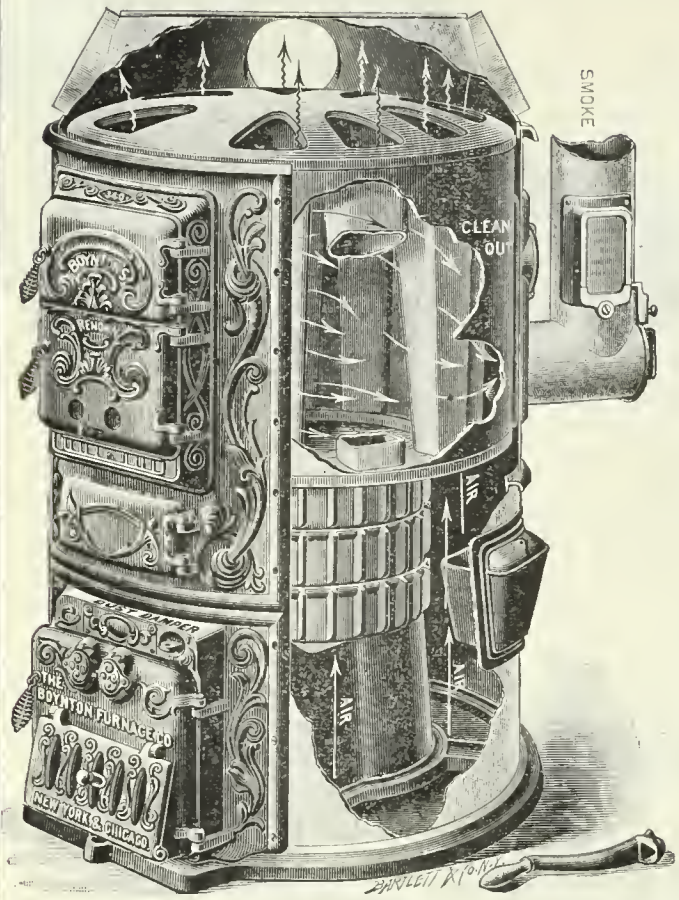
and Ranges in the World,

AGO. BUFFALO.

First Prize Paris 1900.

BOYNTON'S "RENOWN"

PORTABLE FURNACE



A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**

NEW YORK, CHICAGO.

1902 "RELIABLE" STEEL RANGES

Are Perfect in Every Detail.

We have added many valuable improvements for the coming season.

Place no orders until you see our line.

Write for Catalogue.

Made by

THE SCHNEIDER & TRENKAMP CO.,

Cleveland. Chicago.

QUICK MEAL

Polished Steel Ranges.

Quick Meal Polished Steel Ranges

Are made with either **Right or Left-Hand Reservoir, with or without Pouch Feed.** The outside sections of their Top Plates are **steel.** Their Oven Doors, Corner Tubes and Base are of **steel plate,** all stamped out and formed up in shapes which make the **body strong** and **practically indestructible.**

"Quick Meal" Polished Steel Ranges have large Feed Doors which permit the use of wood to advantage, removable duplex grates, and the **heaviest triple walls** found in any Steel Range.

RINGEN STOVE Co. SAINT LOUIS

MONARCH CINDERELLA

FOR HARD COAL.

In the Monarch Cinderella will be found one of the most perfect high grade, medium priced, base burning double heaters offered to the trade.

Every modern and desirable improvement is embodied in its construction. We believe the careful buyer will acknowledge that there is not a better stove in its class.

Every point has been studied to make it the best; and for ingenious, effective simplicity in construction it stands without a peer.

Best Workmanship, Best Materials, Silver Nickel.

We would be pleased to send our catalogues.

Pittsburgh Stove & Range Company,

PITTSBURGH, PA.

WESTERN SALES AGENT, W. D Sager, 38 and 40 Michigan St., Chicago, Ill.

Model Oak

Entirely New Line for 1901.

We use the old name, but the numbers are different.

The Round Air Tight Register is ground into its seat on the inside of the ash pit door and will remain at any degree of opening required to supply air for combustion through the opening.

The register construction is such that the **Grate Handle** can be pulled out through the register opening

The Extension on Top of the Fire Pot extends up inside of the steel drum and is cast solid with the fire pot so it cannot twist and warp.

The Sectional Ring fits over the flange turned out on the bottom of the steel drum.

The Ash Pan fits tightly all around the edges of the ash pit.

The joints remain tight.

The price is just right.

Ask for **more information.**

MODEL OAK.

The Portsmouth Stove & Range Co.,

THE BUSIEST MAKERS OF STOVES & RANGES IN THE WORLD

Portsmouth, O.

MORLEY BROS.,
Saginaw, Mich.,

Agents for Michigan and the Northwest.

SUNSHINE OAK.

A FULL LINE.

Sizes—14 inch to 22 inch.

High Class and First in its Class.

Just the Thing for School House Heating.

Our descriptive circular and price-list will interest you.

MADE AT THE SUNSHINE STOVE SHOP.

THE READING STOVE WORKS,

ORR, PAINTER, & CO.,

Main Office and Foundries:
READING, PA.
Western Foundry: DAYTON, OHIO.

BRANCHES:
153-159 S. Jefferson Street, CHICAGO,
86-90 Canal Street, BOSTON.
64-66 N. 2d Street, PHILADELPHIA.
411 William Street, BUFFALO.

CATALOGUES SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

M TRADE MARK

OORE'S STEEL GEM COOK STOVES

being a new departure and "a good thing," were copied extensively—naturally *So.* But *you* want the original.

JOLIET STOVE WORKS, Joliet, Illinois.

WROUGHT STEEL

RANGES

LIKE THE

"PACIFIC"

Are best because they're made stronger, better, more perfect than any other similar construction. You should write for prices and secure our Catalogue.

It is made with High Closet, Rolling Front, Six Holes, for Hard or Soft Coal; is the latest, best and handsomest Steel Range ever offered, one that you can offer as simply "out of sight" compared with that sold by the peddlers. Try it.

...THE...

JOHN VAN RANGE CO.,

Warerooms:—419 ELM ST.

Factories:—6-8-10 and 12 HOME ST.,

CINCINNATI, O.

DAY and NIGHT

THE RICHMOND

Steam and Hot Water

BOILERS

keep up their good work, giving more heat with less coal than any other heater made. Powerful, economical, durable. Quick to set up, quick to clean.

A Catalogue sent for the asking.

THE RICHMOND STOVE CO., - Norwich, Conn.

DON'T

handicap yourself in the stern competitive struggle after business by handling an inferior range or furnace. You can't afford to pursue such a course or you will find yourself in the rear division of the procession. The way to get to the front in the furnace and range trade in your town is to handle recognized leaders like **SCHILL** FURNACES and RANGES. The company making these ranges has a larger capitalization and greater facilities than ever before, and these goods are to be even more widely known in the future than they have been in the past.

Write us for catalogue and discounts.

THE SCHILL BROS. CO.,

CRESTLINE, O.

Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing.

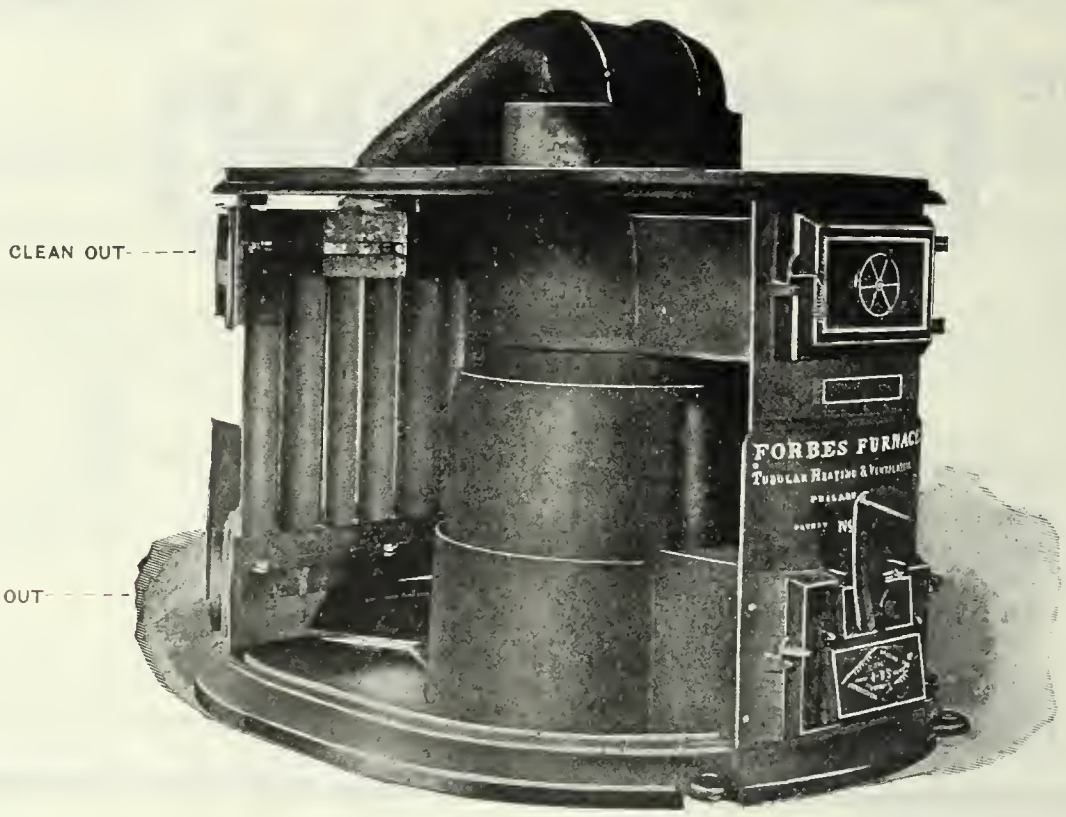
SEND FOR CATALOGUE.

Bergstrom Bros Co.

NEENAH, WIS.

A Radical Departure.

FORBES (Improved) WARM AIR FURNACE.

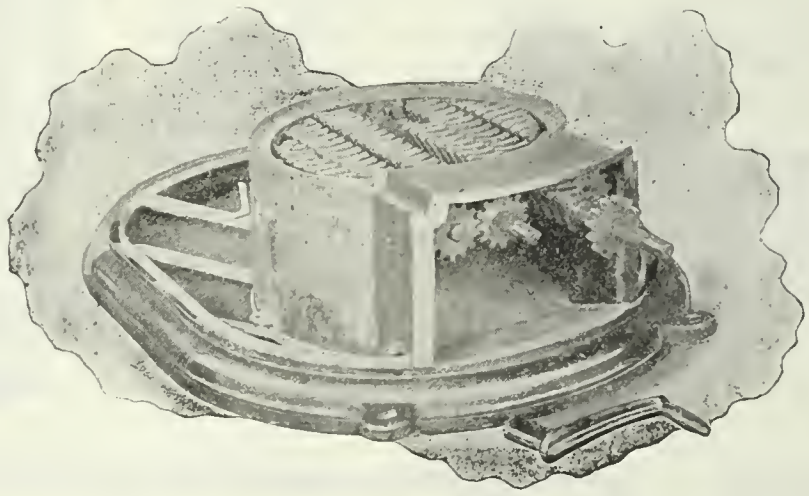


VERY LOW IN HEIGHT, 4 FT. 3 IN. OVER ALL, IN ALL SIZES.

Our aluminum radiating manifold is an entirely new principle applied to heating air. We save the heat that all other heaters allow to waste up the chimney, and send it through the house—saving coal for the consumer.

THE NEW TRIPLEX GRATE.

Perfect Shaking.



Perfect Dumping.

Furnished with the Forbes Furnace.

Can be easily repaired, each bar can be taken ont separately and replaced without disturbing the other bars.

A FEW POINTS OF MERIT, DEMONSTRATED BY THE FORBES FURNACE: Being oval in shape, more pipes can be taken from it than from any other furnace.

Great durability and ***economy***—will last for years and is twice as economical as any other furnace.

Equal heat to all points, regenerative—burning ***all gases*** and—

LOW IN PRICE—WITHIN THE REACH OF ALL.

WRITE FOR PRICES AND CATALOGUE.

TUBULAR HEATING AND VENTILATING CO.,

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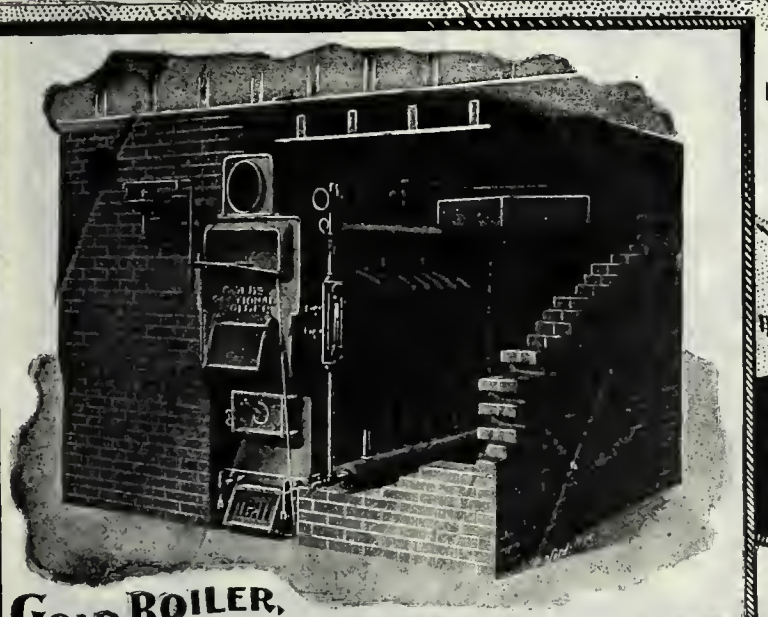
THE H.B. SMITH CO.

WESTFIELD, MASS.



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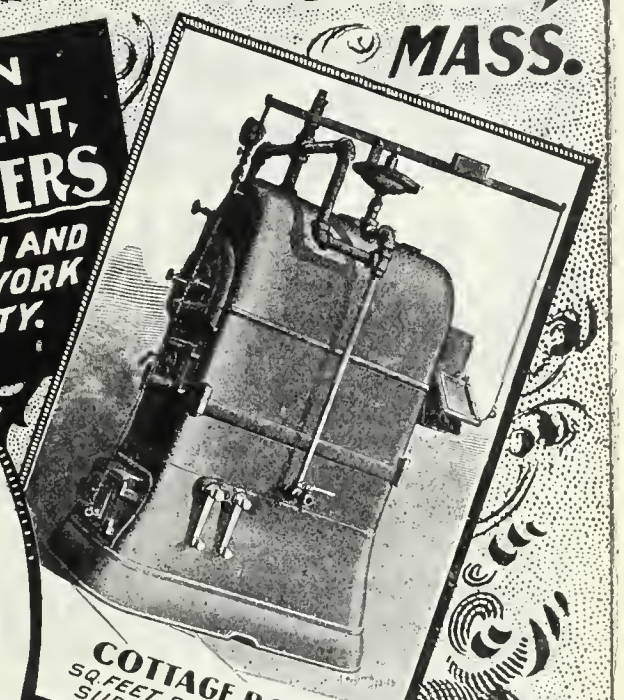
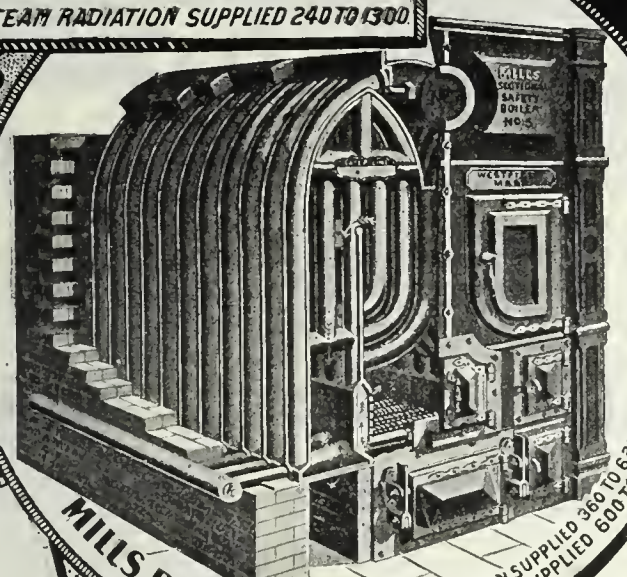
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

EUROPEAN AGENT,
AUG. EGGERS
BREMEN AND NEW YORK CITY.



COTTAGE BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 100 TO 550.

PACIFIC COAST AGENTS,
DUGAN BROS.
SAN FRANCISCO CAL.



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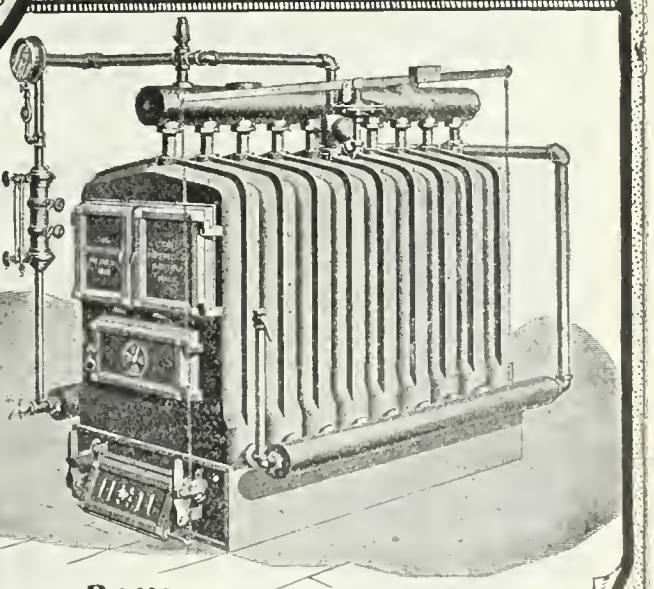
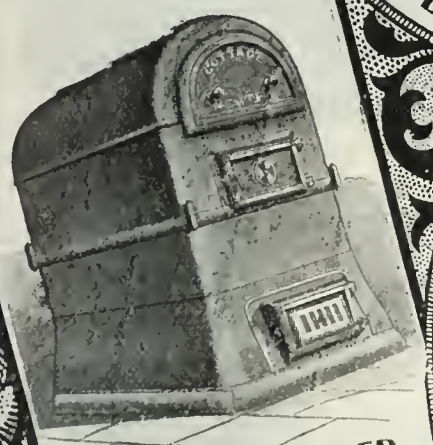
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.



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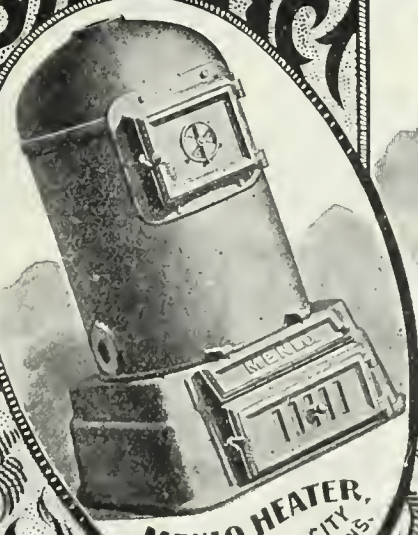
SQ. FEET WATER RADIATION SUPPLIED 150 TO 1000.



MENLO HEATER,
TANK CAPACITY
100 TO 180 GALLONS.

Western Agents
WESTERN BRASS MFG CO.
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SALESROOMS:
133 CENTRE ST., NEW YORK CITY.
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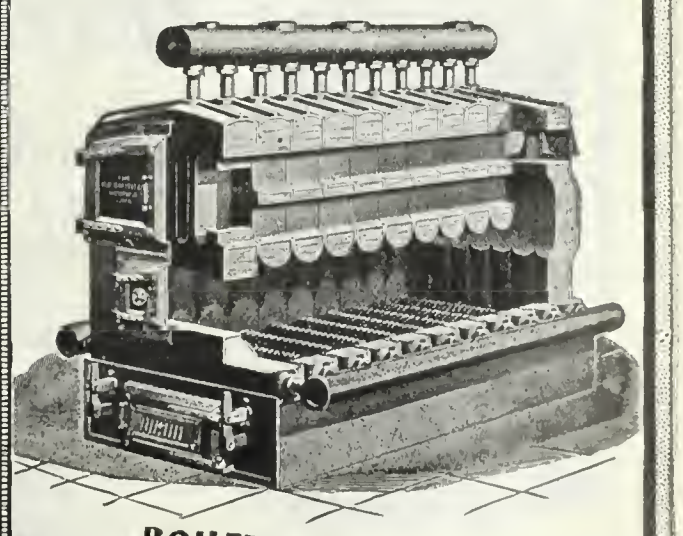

MERCER BOILER,
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Royal Heaters.

MANUFACTURED BY THE

HART & CROUSE Co.

UTICA, N.Y.

ALL THE LEADING LINES OF

STEAM, HOT WATER & HOT AIR,

FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST. N.Y.
COLUMBUS, O.

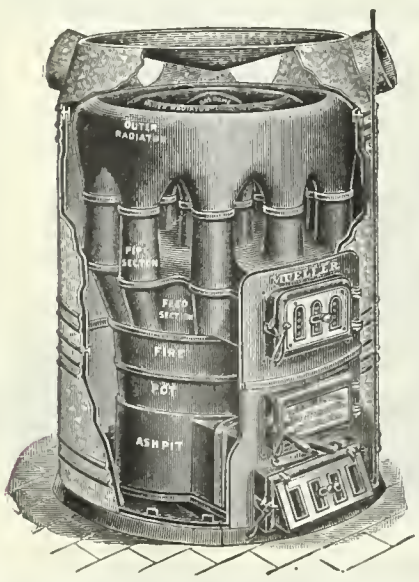
BRANCHES.

79 LAKE ST. CHICAGO.
ST. LOUIS.

WINCHESTER

How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.

HEATER.



MUELLER

— ON —

FURNACES and BOILERS

IS A GUARANTEE OF

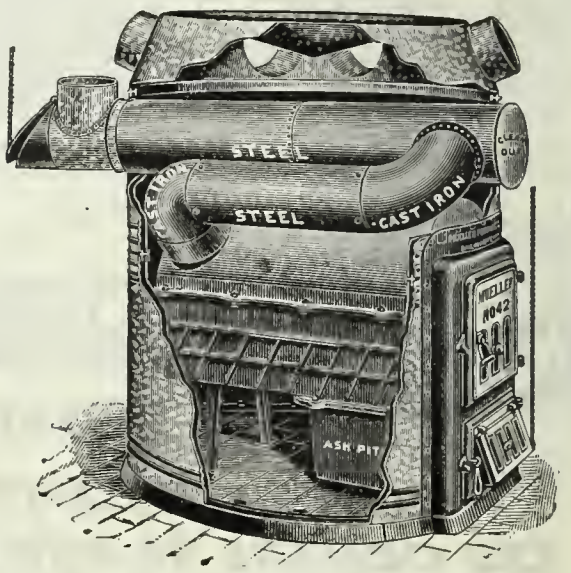
Durability, Economy and Satisfaction.

WHY NOT HANDLE THE BEST?

They cost no more, are easier sold and at a greater profit.

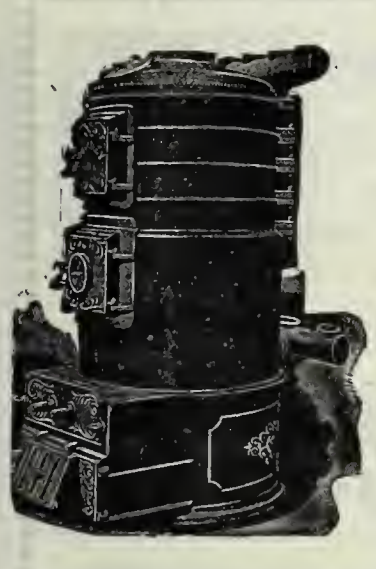
Write for our 1901 Catalogue and Prices.

GET OUR SPECIAL REGISTER OFFER.



L. J. MUELLER FURNACE CO., 190 Reed Street, MILWAUKEE, WIS.

FOR EVERY SITUATION.



You know how it is. Many people can be satisfied with an ordinary heater. But now and then you run across a man who positively will not buy until he is thoroughly convinced that he is getting the best possible heater for the money.

Such a situation requires a

"GURNEY" HEATER,

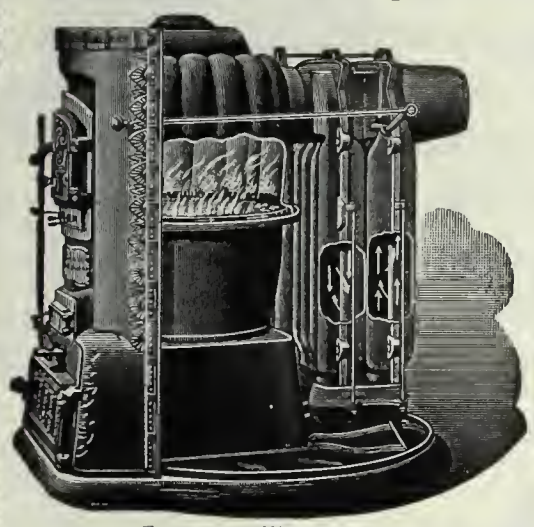
because you can then assure him that it's impossible to buy any heater that is more durable, more efficient, or more economical to operate than the "Gurney."

And now: If the "Gurney" is good enough for such a situation it's the most desirable for every situation, especially ***since it costs no more than many of the less efficient heaters.*** Make it a practice to use the "Gurney" in all your work.

Gurney Heater Mfg. Co., 74 FRANKLIN ST., BOSTON.
111 FIFTH AVE., NEW YORK CITY.
222 to 224 Lake St., CHICAGO, ILL.

Western Selling Agents, JAS. B. CLOW & SONS,

BENGAL FURNACES



HAVE MORE RADIATING SURFACE
THAN ANY FURNACE THEIR SIZE.
THEREFORE MORE HEAT FOR A GIVEN AMOUNT OF FUEL.
THAT MEANS A SAVING IN DOLLARS.

You can make no mistake in taking on THE BENGAL LINE.
THEY ARE TRADE WINNERS.

Secure a BENGAL AGENCY at once.
CATALOGUE AND FULL INFORMATION ON REQUEST.

FLOYD, WELLS & CO.,
ROYERSFORD, PA.

Eastern Selling Agents,
GURNEY & CO.,
Washington, Hanover & Elm Sts.,
Boston, Mass.

M TRADE MARK

OORE'S AIR-TIGHT HEATER

was the first,—the Original. The brains that evolved it, will keep it—*first.*

Wide-awake Hardware men are invited to write for particulars.

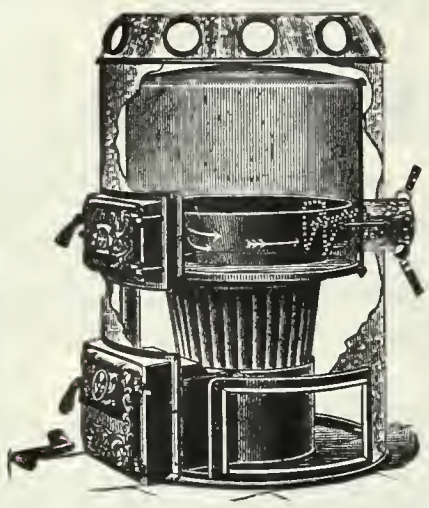
JOLIET STOVE WORKS, Joliet, Illinois.

BRAND STOVE CO.

STOVES, RANGES and FURNACES.
SEND FOR CATALOG.
MILWAUKEE, WIS.

THE "*DIGHTON*" has advantages over much more expensive Furnaces, especially in the ***economy of fuel.***

The "*DIGHTON*" can be sold at a profit when figured in competition.



No part of the price you pay for the "*DIGHTON*" is for anything other than real Furnace value.

What it will accomplish———

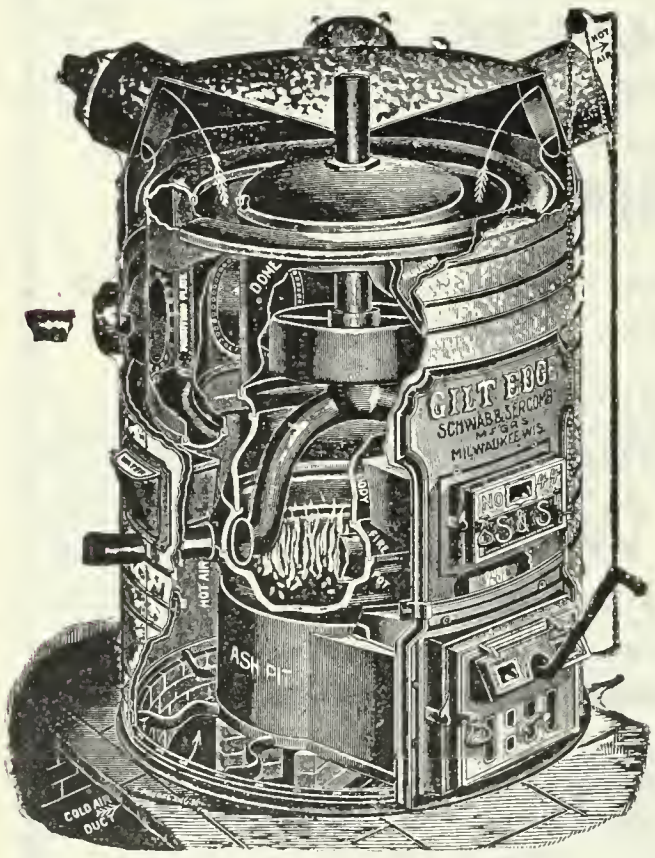
How long it will last without repairs———

The satisfactory results to your customer———

No other Furnace maker can, or will, give, or guarantee to give, better results than we guarantee to your customer who buys the "*DIGHTON.*"

The "*DIGHTON*" price is very much less than other Furnaces of anywhere near equal value are sold for.

DIGHTON FURNACE CO., Taunton, Mass.



UTILIZED radiating surface, that is economy. Sectional fire pots from 1 in. to 2 in. thick and other parts in proportion, that is durability. Positive gas-tight joints, that is necessary to health. These, with all other improvements for ease of management, are combined in the Gilt Edge Furnaces. They are made for all kinds of fuel, and are the very best.

Write for Catalogue and Prices to

R. J. SCHWAB & SONS CO.,

Mfrs.,

MILWAUKEE, WIS.

E. E. DUNNING, Mgr. Furnace Dept.

KEEP UP WITH THE PROCESSION.

CONTRACTORS USING OUR BOILERS

Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

If this interests you drop us a line and receive our NEW Catalogues and Prices.

KEWANEE BOILER COMPANY

Home Office and Factory,

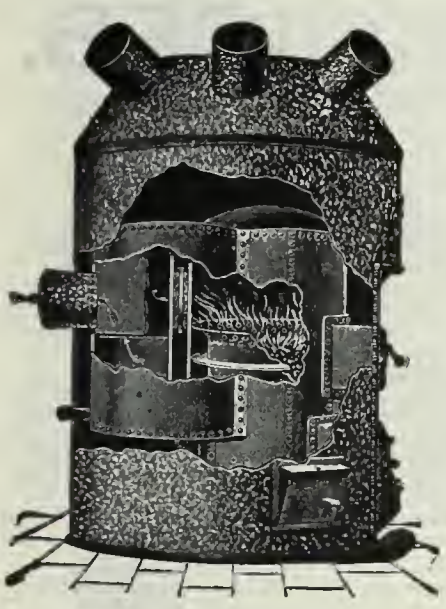
Chicago Store, 169 Lake St.

KEWANEE, ILLINOIS.

MOORE'S STOVES AND RANGES

are *original* types. Each contains some distinctly advantageous and up-to-date feature, which makes it *THE EASY LINE TO SELL.*

JOLIET STOVE WORKS, Joliet, Illinois.



WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

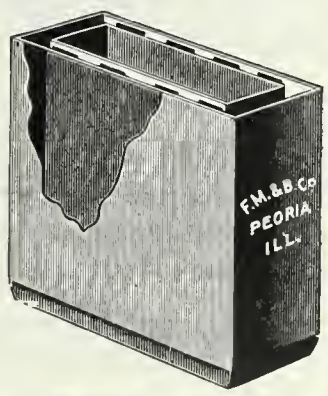
Absolutely gas and dust tight. A great heat producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

SEND FOR CATALOGUE PEORIA, ILLS.



"The Handy Furnace Pipe."

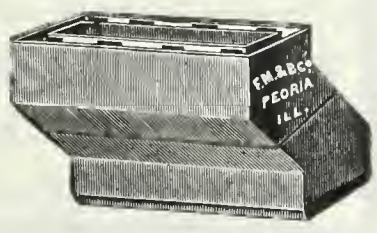
MADE WITH A VIEW OF BEING SAFE.

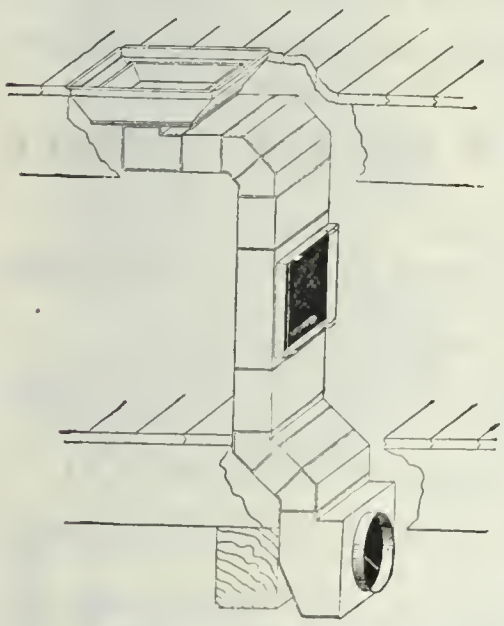
The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,

SEND FOR CATALOGUE. PEORIA, ILLS.





After Six O'clock To-night,

OR ANY OTHER NIGHT,

We are prepared to furnish you with hot air wall pipes, not only as good, ***but better,*** than any other furnace pipe on the market, and to substantiate our claim will mail catalogue and ship sample for comparison, and the ***price is right,*** too.

SAFETY FURNACE PIPE CO.,

Nos. 11 and 13 East Atwater St., DETROIT, MICH.

"O.H." ONE PIECE STOVE PIPE Elbows

Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM In throat or under side of Elbow.

HANDSOMEST HEAVIEST AND STRONGEST STOVE PIPE ELBOW MANUFACTURED.

—SOLE MANUFACTURERS,—

THE LAWRENCE-LETTS ELBOW CO., Ltd., - - Waverly, N. Y.

Pierce Boilers Perfect Burners

For Steam and Water Heating.

Florida Steam Boiler.

Pierce Steam and Water Boilers are unequaled for economy of fuel consumption, combined with large heating capacity.

GREATEST VARIETY OF SIZES AND STYLES.

SEND FOR NEW ILLUSTRATED CATALOGUE.

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46-48 E. 20th St.	50 Oliver St.	24 So. 7th St.

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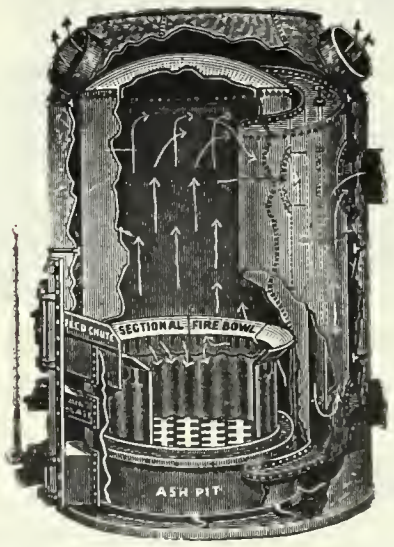


Steel Furnace.

MADE BY

THE LENNOX MACHINE COMPANY,

East Fredrick St., Marshalltown, Iowa.

CATALOG FREE

SHINES FOR ALL

It is the polishers' friend, and will polish anything. Write for free sample to 297 E. Washington St., Ind'p'l's, Ind.

GEO. W. HOFFMAN

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES

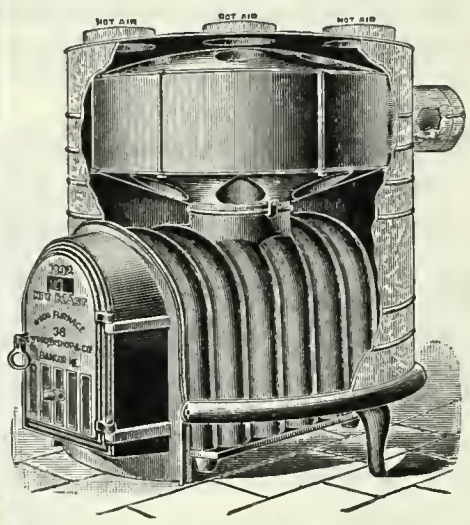
HOT-AIR AND COMBINATION AIR AND WATER FURNACES

LAUNDRY STOVES CONFECTIONERS' STOVES

CABOOSE RANGES ETC ETC

STAMFORD CONN

WOOD FURNACES.



THE HOT BLAST.

Established 1839. Incorporated 1894

OUR IMPROVED MONITOR.

The most powerful heater made.

2 SIZES, PORTABLE OR BRICK SET.

No. 38 for 3 ft. wood. No. 50 for 4 ft. wood.

OUR LOW PRICED HOT BLAST.

The most practical, durable heater on the market at anywhere near its cost.

FIRE BOX BODY made in one piece, corrugated, is very heavy and cannot break or warp.

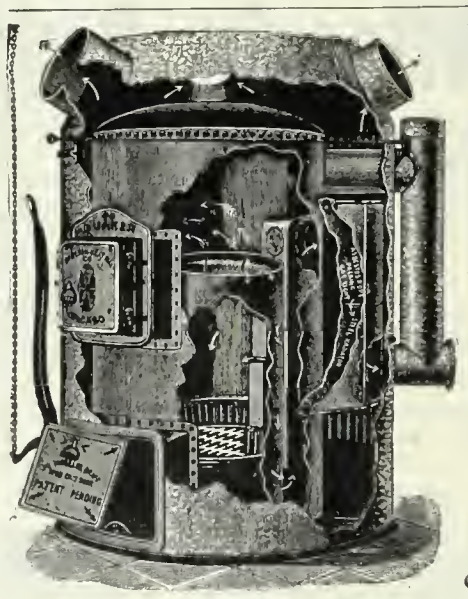
RADIATOR with heavy cast iron heads, heavy plate iron shell and hot air flues, has extra large radiating surface and is self cleaning. Every part of radiating surface is directly exposed to fire, allowing no possibility of creosote in the apparatus. No wood grate. Fuel burns on the ashes in the only practical, economical way.

3 SIZES, PORTABLE OR BRICK SET.

Nos. 36, 42 and 48, for 3, 3½ and 4 ft. wood.

Thousands in use in all sections of the country. Testimonials and full particulars sent on application to the manufacturers.

WOOD & BISHOP CO., BANGOR, MAINE.



The THREE requirements for a first-class furnace are ALL Incorporated In the

NEW QUAKER FURNACE

Viz.:

ECONOMY in FUEL.

ECONOMY in TIME spent in caring for the fire, and

ECONOMY in REPAIRS.

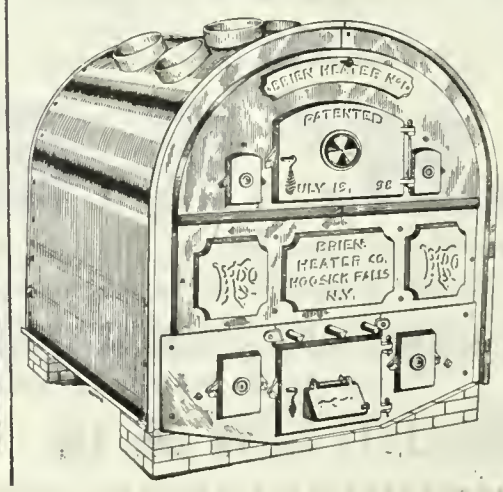
Drop us a postal and we will tell you all about it.

WIRETON HEATING CO.,

Main Office and Works,

BLUE ISLAND, ILL.

Chicago Office, 40 Dearborn St.



Brien Heater.

A perfect, all cast WOOD or COAL burner. There is no other Hot Air Furnace as low down as the "BRIEN."

Write for territory, catalog and prices.

BRIEN HEATER CO.,

HOOSICK FALLS, N. Y.

JEWEL STOVES AND RANGES..

JEWEL STOVES AND RANGES
DETROIT STOVE WORKS
LARGEST STOVE PLANT IN THE WORLD

A Complete, Well Advertised Line;
Low Prices and Good Workmanship.

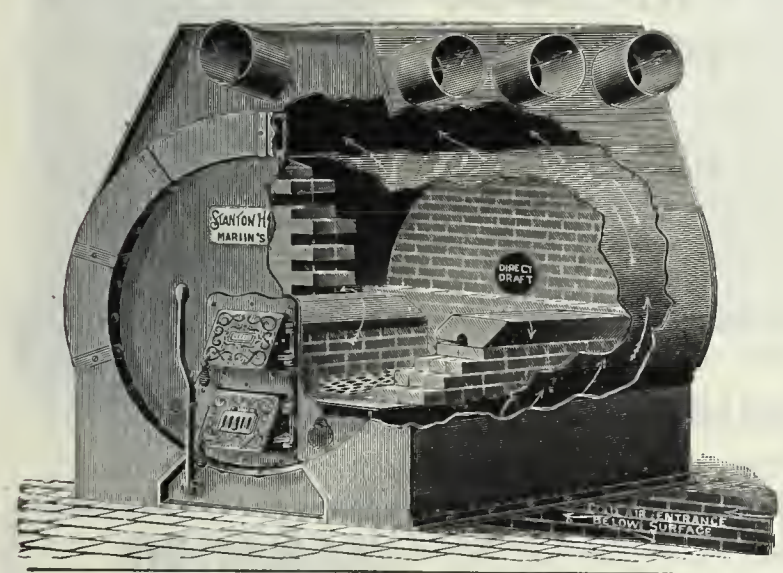
Please Write for Catalogue.

DETROIT STOVE WORKS.

Detroit - Chicago.

The Stanton Seamless Heater,

PORTABLE CASED.



LOUISVILLE, KY., Apl. 5th, 1901.

THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

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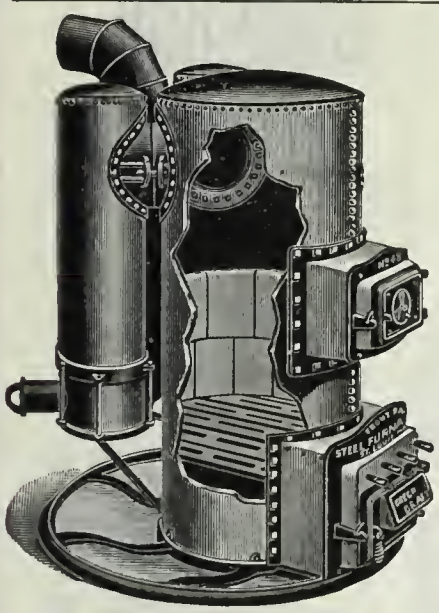

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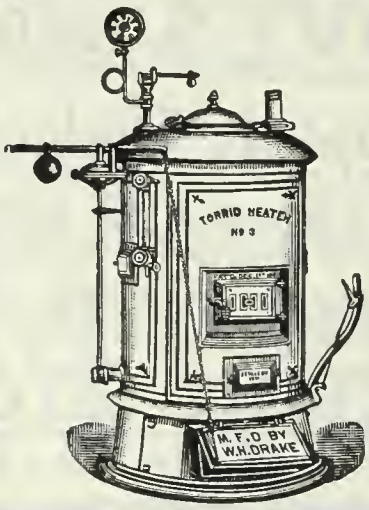

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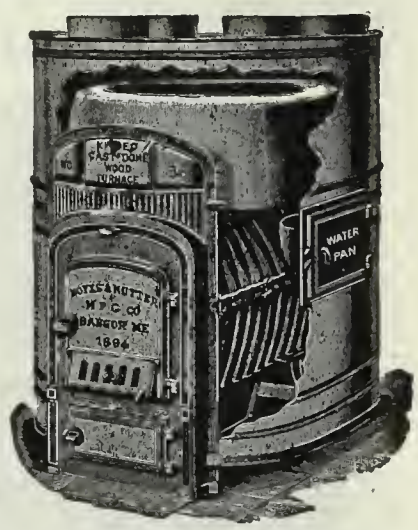

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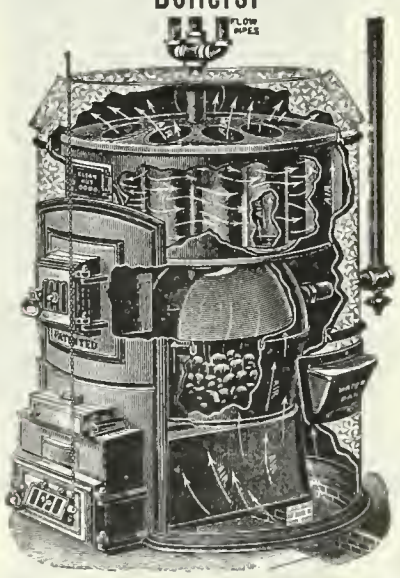

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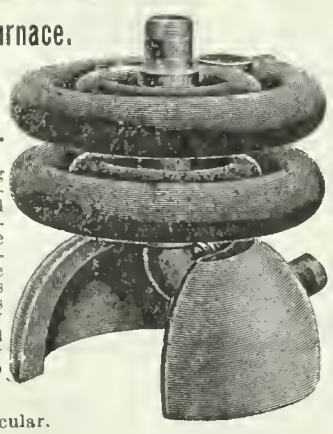

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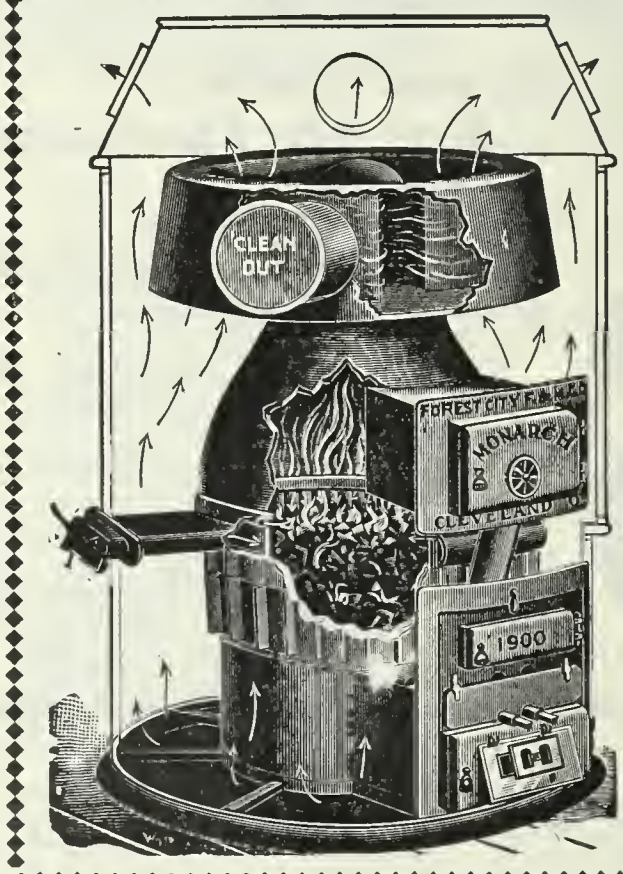

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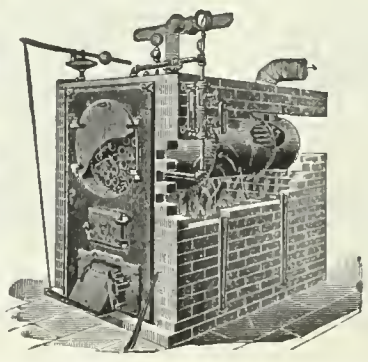

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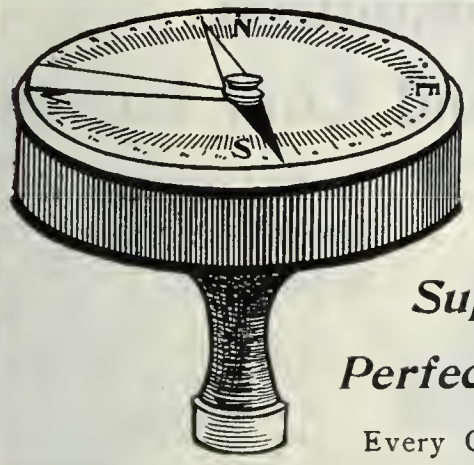

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Chapter II.—House Heating—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

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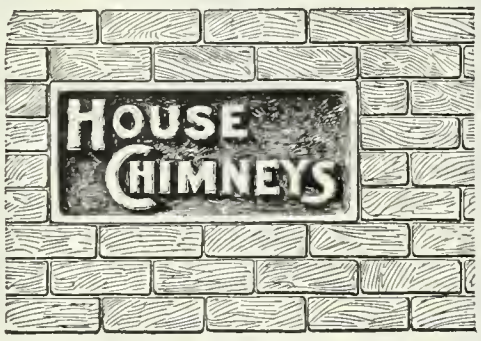

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CONDENSATION IN STOVE PIPES 46, 47

SMOKE PIPE FOR WOOD FURNACES 48

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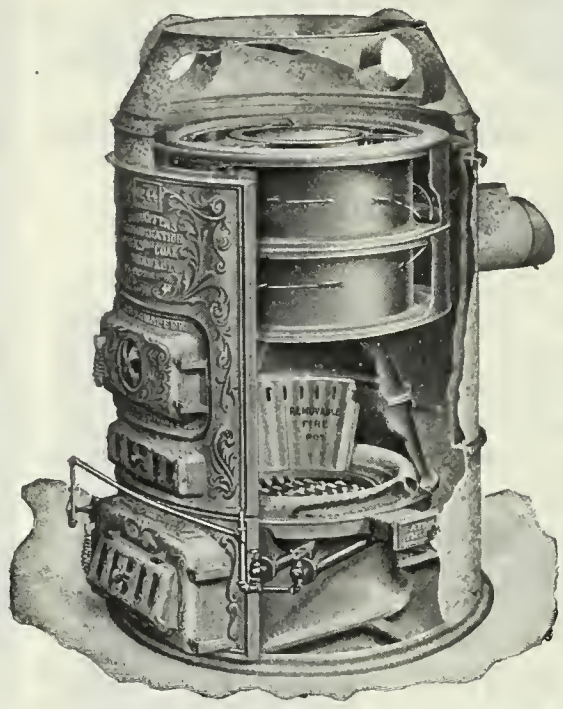

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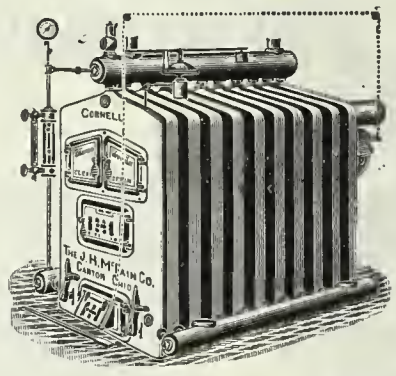

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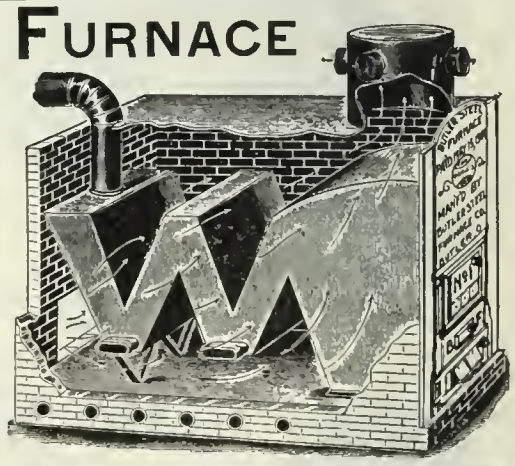

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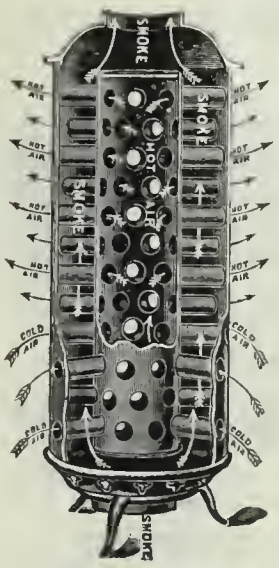

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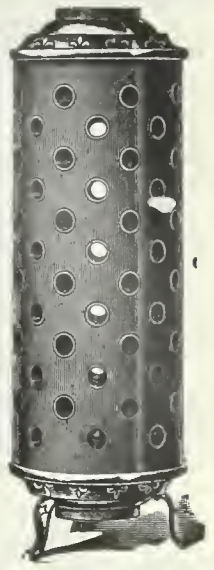

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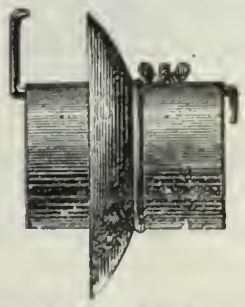

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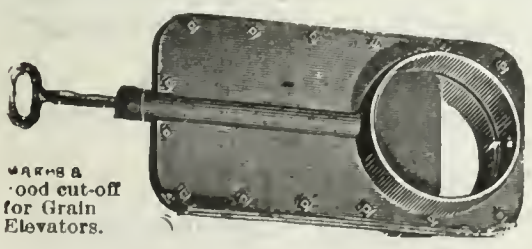

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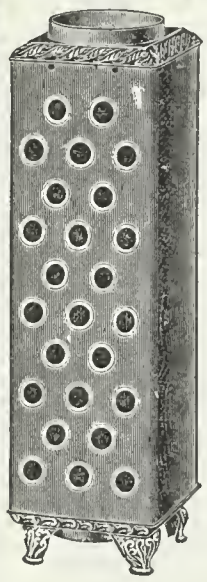

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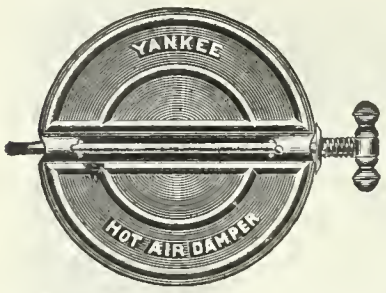

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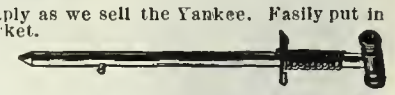

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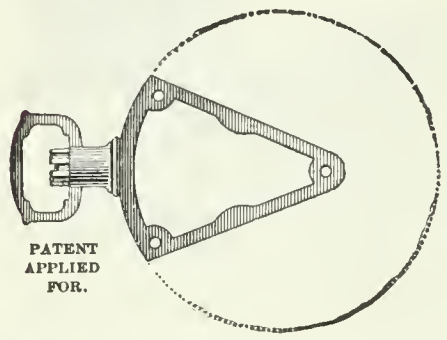

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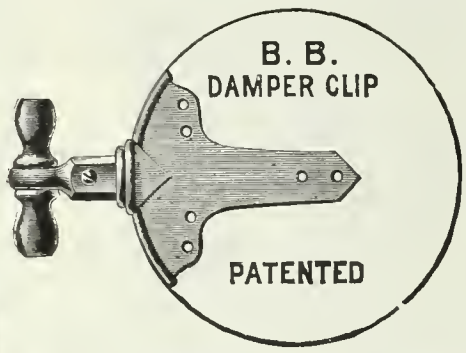

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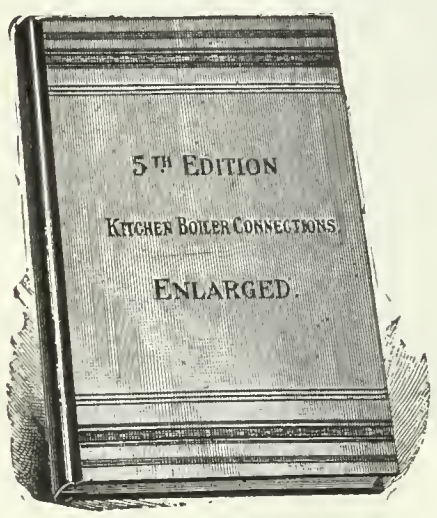

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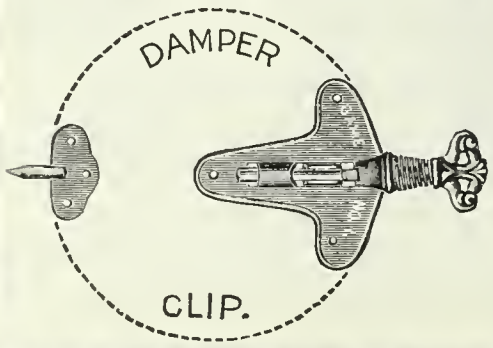

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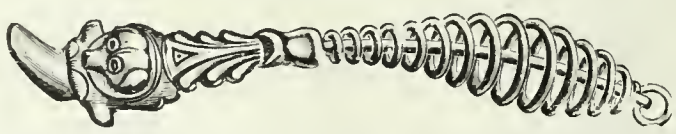
Stove Pokers and Lifters.



"Siberian Lifter." Fancy design, nickel plated, body malleable iron.

"SIBERIAN" POKER. Either bent or straight ends; length, 20 in.

Manufacturers of HARDWARE SPECIALTIES.

WRITE US FOR PRICES.

ARCADE MANUFACTURING CO., - FREEPORT, ILL.

PATTERNS

FOR STOVES AND HEATERS.

First-class in wood and iron

Vedder Pattern Works, - Troy, N. Y.

Leather and Rubber

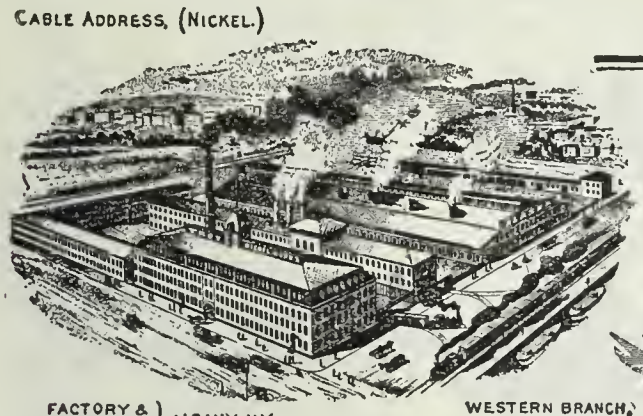
WASHERS,

Machine cut, at less price than can be cut by hand. Send Sample for prices.

I. G. MARSTON & CO.,

200 Ruggles St., Boston, Mass.

CABLE ADDRESS, (NICKEL.) LOCAL & LONG DISTANCE TEL.



FACTORY & MAIN OFFICE, ALBANY, N.Y.

WESTERN BRANCH, CHICAGO, ILL.

TROY NICKEL WORKS

Albany, N.Y.

POKERS, LID LIFTERS,
KNOBS, HANDLES, and a full line of HARDWARE.

MARCY STOVE REPAIR CO.,

MANUFACTURERS OF

RANGE, STOVE AND HEATER REPAIRS

AND FIRE-BRICK LININGS,

74 Beekman Street, New York.

FOUNDRY, Perth Amboy, N. J.

FIRE-BRICK FACTORY, 36 to 46 South Fourth Street, Brooklyn, L. I.

BRANCH STORES:
South Fourth Street, Brooklyn, L. I. 362 Grove Street, Jersey City, N. J.

CATALOGUES NOW READY.

STOVE REPAIRS
WATER FRONTS

AND EVERYTHING FOR THE TIN SHOP

We can serve you better than anyone else. WHY? Because we have the stock on hand.
Repairs for 20,000 different stoves and furnaces.

WRITE FOR CATALOGUE. **H. E. HESSLER CO., Syracuse, N. Y.**

M. D. VALENTINE & BRO CO.

FIRE BRICK

CUPOLA LININGS A SPECIALTY.

WOODBRIDGE. N. J.

OUR facilities enable us to carry constantly on hand the largest stock in this country. This assures immediate shipment on receipt of order.

THE
PRESBREY STOVE LINING

Will not clinker and will last longer than any other.

SEND FOR NEW CATALOGUE.

PRESBREY STOVE LINING CO., Taunton, Mass.

AMERICAN SEAL

Elastic Oil Roofing Cement, Stove Putty,
Asbestos, Furnace Cement and Roofing Paint.

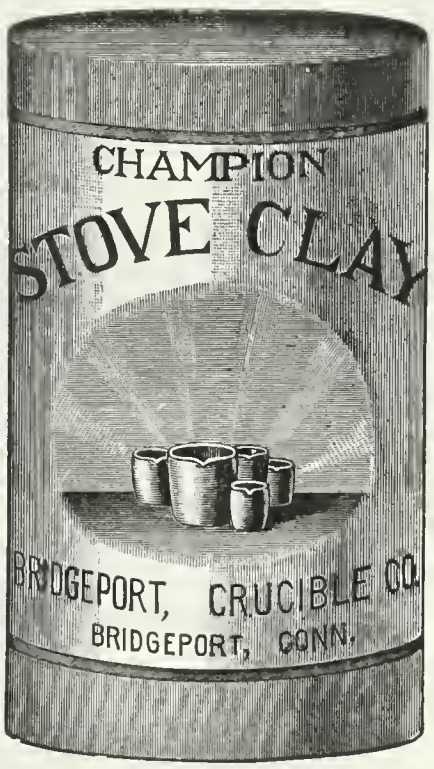
WRITE FOR PRICES.

J. L. PERKINS & CO., Western Agents, 241 Lake St., Chicago.

HANDLE THE BEST.

CHAMPION STOVE CLAY.

Is the only brand made of crucible materials, viz.: Imported German Fire Clay and Plumbago from Ceylon.



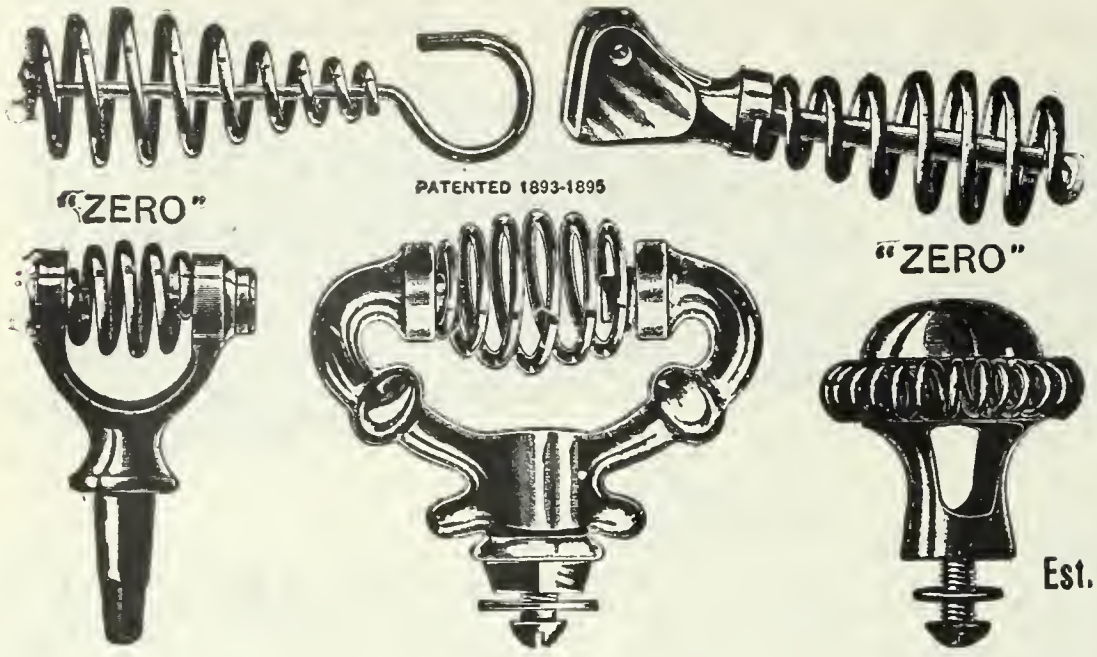
Dealers are invited to send for circulars.

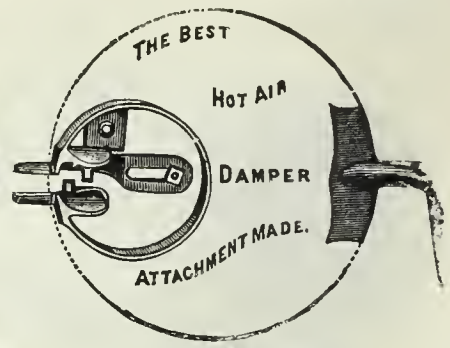
Packed in neat, attractive, round pasteboard boxes of three sizes: large, medium and small, holding about 10 lbs., 6 lbs. and 2½ lbs., respectively.

ALSO SOLD IN BULK.

Your jobber can furnish the goods.

BRIDGEPORT CRUCIBLE CO.
Bridgeport, Conn.





"ZERO"
WIRE GOODS.
MANUFACTURED BY
Est. of W. F. GREENE,
TROY, N. Y.

We Manufacture

Dealers' Gasoline Polish.
The quality is right.
The price is right.

RUTLAND FIRE CLAY CO.,
NORTH EAST, MD. Rutland, Vt.
60 Wabash Ave., Chicago, Ill.

STOVE REPAIRS.

Stove dealers' SUPPLIES of all kinds.

Water Fronts a Specialty.

WE GUARANTEE PROMPTNESS IN FILLING ORDERS

Catalogues, Order-Books, Postals or Envelopes sent upon application.

Largest Jobbers in New England

HENRY N. CLARK CO.,
56 and 58 Union St.,
BOSTON, MASS.

COLWELL LEAD CO.,
63 Centre Street, New York.
Manufacturers of
LEAD PIPE, SHEET LEAD, SHOT,
And Sellers of
Everything You Want for Plumbing.

DIXON'S Brazing Graphite

Prevents the brass from running over and sticking to the metal. Used and recommended by bicycle makers and repairers and others. Send for sample and price.

JOSEPH DIXON CRUCIBLE CO., - JERSEY CITY N. J.

CLEVELAND, Ohio, July 8th, 1901.

To the Stove Trade:

We believe there is a chance for the consolidation of all, or nearly all, the stove foundries of this country into a gigantic trust.

This concern has not been approached and will not be a part of the scheme.

We shall continue, however, to make patterns for any one having the price. Do you handle a hundred Oak stoves or steel ranges in a year? If so, it will pay you to own your own patterns—get castings from your local foundry and quadruple your profits.

All correspondence confidential. Yours respectfully,
THE GOBEILLE PATTERN CO.,
Cleveland, Ohio.

ALWAYS IN STOCK.
ALL SIZES OF
Galvanized range boilers, expansion tanks and boilers with copper tube coils inside for heating water by steam.
L. O. KOVEN & BROTHER,
Office 50 Cliff St., New York City.

GALVANIZED STEEL and WOOD TANKS.
All sizes and shapes
J. H. EDWARDS,
5 Park Place, N. Y.

TRIMO PIPE CUTTER

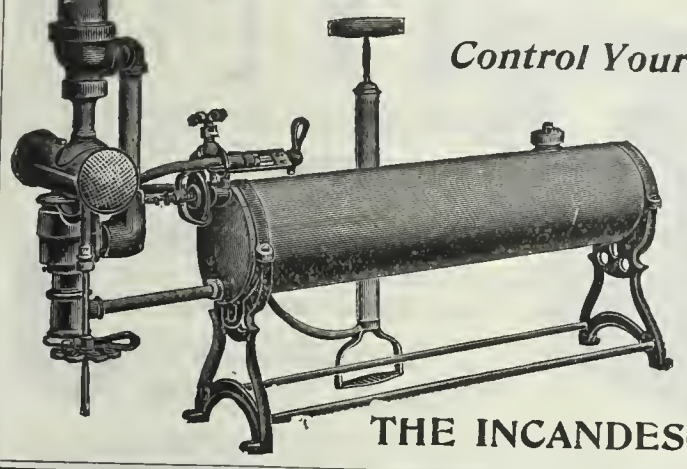
Decided improvement. Less friction. Can be changed from a roller to a three-wheel cutter. Extra wheels in the handle. Send for catalog.
TRIMONT MFG. CO., Roxbury, Mass., U.S.A.

LIGHT! LIGHT!

THE CHEAPEST AND BEST IS

THE AIR LIGHT

Control Your Own Gas Expense.



A radical departure from methods heretofore attempted in illumination. Extreme cheapness and great brilliancy of light, simplicity of operation and durability is the result. As a commercial light it is the crowning triumph of lighting apparatus, costs less than one-half that of gas light or electricity, requires less attention than one ordinary oil lamp. Gives 600 candle power at one-half a cent per hour and is absolutely safe. Thousands of these machines are in daily use and giving perfect satisfaction. Size of average apparatus, 33 x 12 x 12. Any Tinner can put it up. Write for descriptive pamphlet and prices.

MANUFACTURED BY

THE INCANDESCENT LIGHT & STOVE CO., 422 and 424 E. Pearl St., Cincinnati, O., U. S. A.

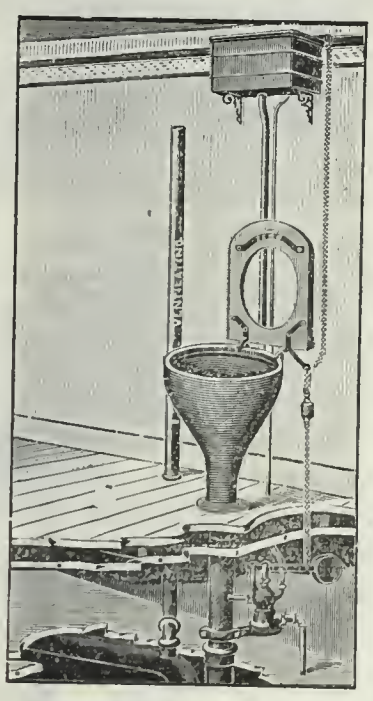
Direct from the Makers at First Cost . . .

Good buyers want to know what that means. They may learn by asking for a catalogue of our imperishable Sanitary Laundry Trays and Sinks.

Chas. Graham Chemical Pottery Works,

986 to 1018 Metropolitan Avenue, Brooklyn. New York.

Zero Automatic Closet



Will not freeze in any climate Water automatically wasted from fixture.

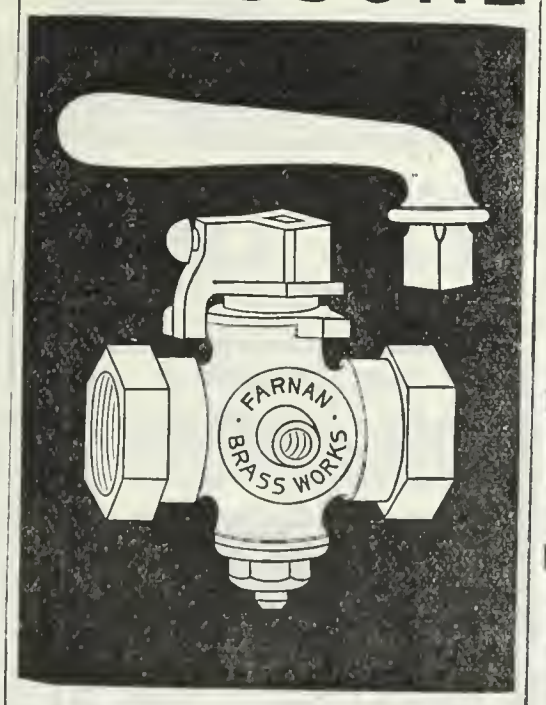
The only absolute Anti-freezing Open Tank Closet on the market. Send for descriptive catalog.

Manufacturers of Plumbers' Specialties.

ZERO VALVE & BRASS MFG. CO.,

296 and 298 Seneca St., Buffalo, N.

FOR HIGH PRESSURE



FARNAN BRASS WORKS,

CLEVELAND. OHIO.

FOSTER'S NevRleK

BALL COCK.

Positive, Noiseless. Saves Water.

F. W. FOSTER MFG. CO.,

12 Portland St., Boston.

Vanderman's

ADJUSTABLE

FITTING

FOR

SOIL PIPE CONNECTIONS.

SEND FOR PRICE.

☞ Freight allowed on assorted lots of twelve East of Mississippi River.

Send for Catalogue "A" Showing large line of

PLUMBERS' SPECIALTIES.

The Vanderman Plumbing & Heating Co.,

WILLIMANTIC, CONN., U. S. A.

WATER SUPPLY BIG VOLUME LIFTS

L. E. RHODES CO. HARTFORD, CT.

— His Choice of a Word.—"You look robust," remarked the lady of the house. "Are you equal to the task of sawing wood?"

"Equal isn't the word, Madam," replied the pilgrim, as he resumed his journey. "I'm superior to it."—*Philadelphia Record.*

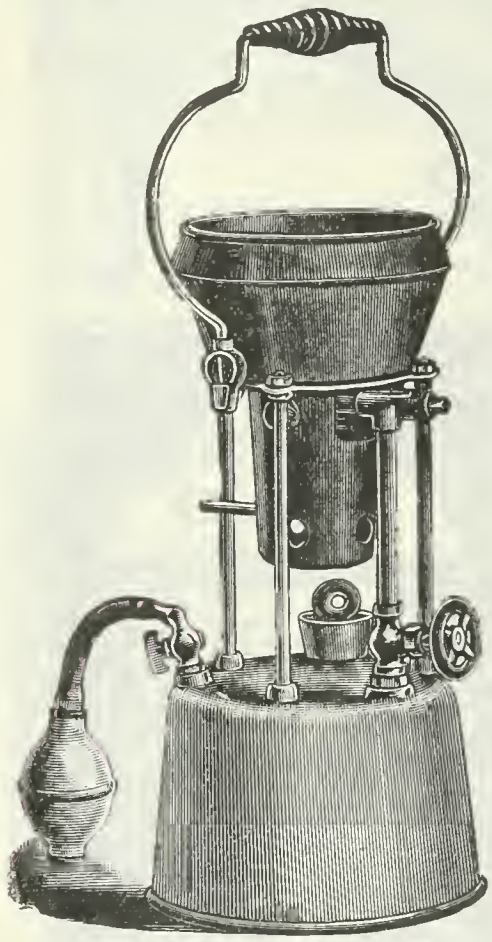
— For Emergencies.—"Dobley has just bought the Century Dictionary for his wife."

"Yes; he said something might come up she'd want to know about some time when he didn't happen to be at home."—*Life.*

L. WOLFF
Manufacturing Company,

General Office,
93 W. Lake Street, CHICAGO.

WOLFF'S IMPROVED PLUMBERS' FURNACE,
The "DURO."



THE "DURO" "F" 1241.

PRICES UPON APPLICATION.

Quantity shipments are packed in cases 6 and 12 furnaces each.

The "DURO" Plumbers' Furnace

Has Drawn Steel Reservoir,
Heavily Galvanized.

Drawn Steel Coil Cup.
Wrought Steel Bottom.
Patent Wire Handle.
Improved Filling Plug.
Safety Air Cock Joints.
No Cast-Iron Parts.

It weighs less than any other Furnace now in use.

In placing on the market

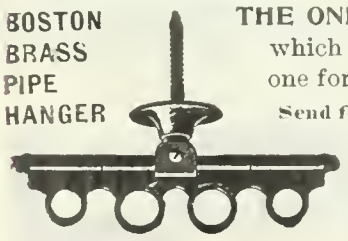
Our Improved Plumbers' Furnace

we have fully succeeded in producing *the best furnace made.* Most perfect in every detail. Of the highest efficiency. In operation, positive and reliable. Of substantial construction; combining lightness, strength and durability, at no more cost to the trade than the old style.

All component parts are interchangeable, being accurately made and fitted before shipment.

Illustrated Catalogue and Price-List sent upon application.

BOSTON BRASS PIPE HANGER



THE ONLY ONE which requires but one form of holder.

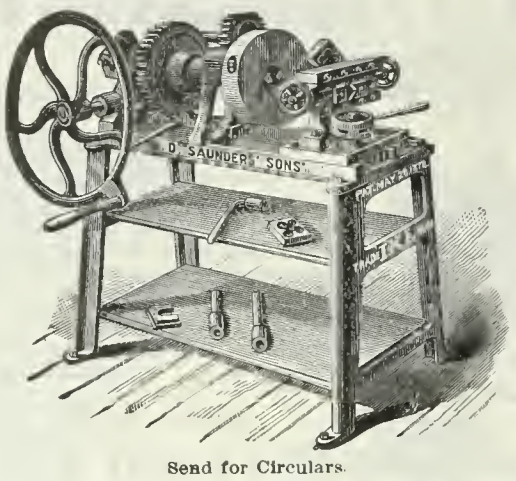
Send for Circular.

JOSEPH H. YOUNG.

Boston, Mass.

D. SAUNDERS' SONS,

MANUFACTURERS OF THE ORIGINAL



TRADE **I. X. L.** MARK

Pipe Cutting and Threading Machine.

Beware of imitations. None genuine without our Trade-Mark and Name.

STEAM AND GAS FITTERS' HAND TOOLS.

Also Patent Wheel Pipe Cutters.

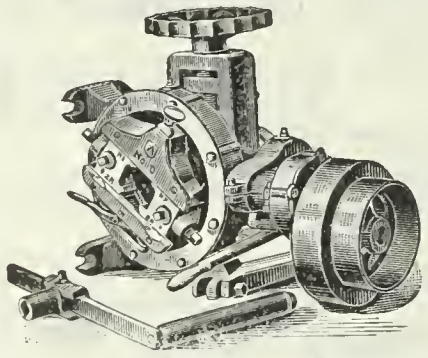
AS SHOWN BY THE CUT.

Pipe Cutting and Threading Machines for Pipe Mill Use a Specialty.

Send for Circulars.

27 Atherton St., Yonkers, N. Y.

WE BUILD A SUPERIOR LINE



No. 0 Threading Machine, Power Attachment.

of PIPE THREADING,
and CUTTING OFF
MACHINES, (Hand or Power,)
STOCKS, DIES and other Tools
For
WATER, STEAM and GAS FITTERS.

—— CATALOGUE? ——

THE ARMSTRONG MFG. CO.,

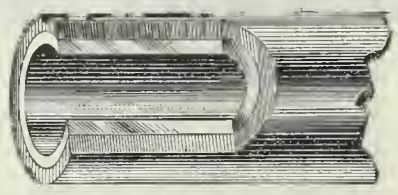
139 Centre St., New York. BRIDGEPORT, CONN.

TIN LINED IRON PIPE.

Some of Its Uses Are for:

Ice Machines, Refrigerating, Bottling and Carbonating Condensers, Automatic Sprinkling System.

HOT WATER PIPE.
SERVICE PIPE.
CIRCULATION PIPE.
SUPPLY PIPE.



This lining cannot be torn from the pipe.

INVESTIGATE. Send for Catalogue and Prices.

LAMB & RITCHIE, Cambridge, Mass., U. S. A.

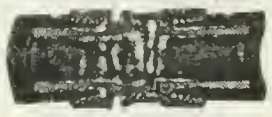
LEAD LINED IRON PIPE.

THE MEILINK

HOSE COUPLING

FITS ANY SIZE HOSE, 2, 3 OR 4 PLY.

A glance at the illustrations will indicate its superior advantages over any other similar device now on the market. Anyone can attach it instantly. Provides a positively tight joint. Easily taken off or put on. Never loses the washer. Won't tear up the lawn



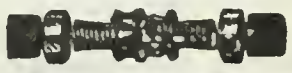
THE BEST THERE IS.

The better you satisfy your trade the better they will satisfy you.

Try a Sample Dozen.

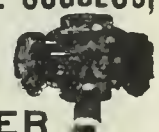
THE
Meilink Mfg. Company,
TOLEDO O.

Write for Prices and Discounts.



NOTHING SUCCEEDS LIKE SUCCESS,

hence the unqualified success others have experienced with the



CLIMAX CELLAR DRAINER

should induce you to use it also Your customers need This Drainer, and you should write to-day for circular and prices, because it is the Plumber best qualified to do intelligently and satisfactorily all classes of work who meets with the geatest success and therefore the success of the

Climax Cellar Drainer

is your success also.

Year of effort have enabled us to produce a Drainer of marvelous perfection, entirely free from stuffing boxes, springs, packings and washers: a result not accomplished by any other manufacturer.

The simplicity, reliability and superiority of the **Climax Cellar Drainer** are proverbial.

Sold by all Jobbers.

MANUFACTURED BY

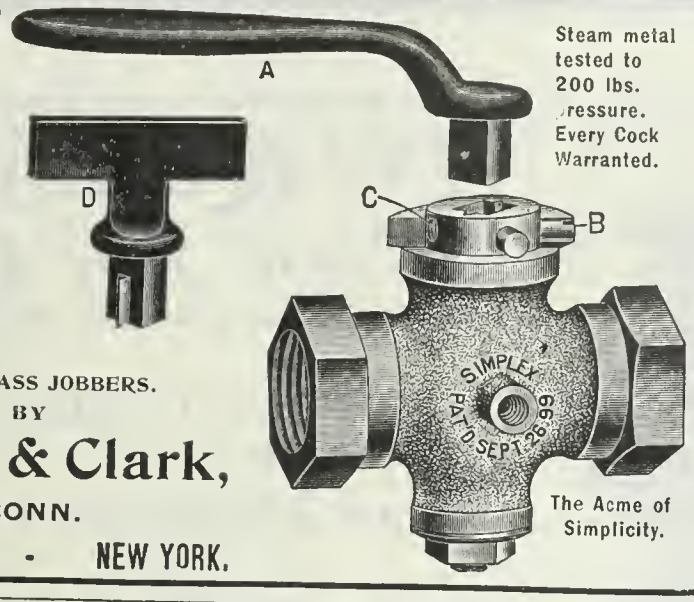
C. M. KEMP MFG. CO.
BALTIMORE.

"Simplex"

Patented

Stop and Waste Cock

Practical plumbers know how difficult it is to reverse any of the cocks hitherto made, because they are so complicated. The "Simplex" can be changed from right to left hand instantly and CAN'T be set wrong. Interchangeable Lever. Tee Handle or Socket Head. To change from right to left or vice versa:—Take out set screw B. Reverse handle. Put set screw in hole C.



The Acme of Simplicity.

Steam metal tested to 200 lbs. pressure. Every Cock Warranted.

FOR SALE BY ALL FIRST-CLASS JOBBERS.

MANUFACTURED BY

Landers, Frary & Clark,

NEW BRITAIN, CONN.

Salesroom, 82 Chambers Street, - NEW YORK.

We Manufacture a Large and Well Assorted Line of

Compression Bibbs,
Basin and Bath Cocks,
Ground Key Lever Handle Bibbs,
Beer, Ale and Liquor Cocks,
Champagne Taps, Racking Cocks,
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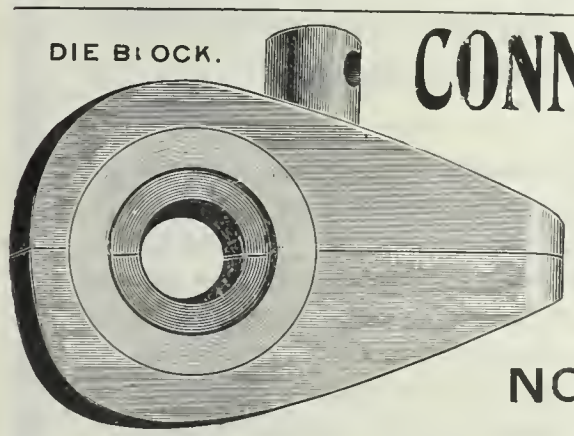
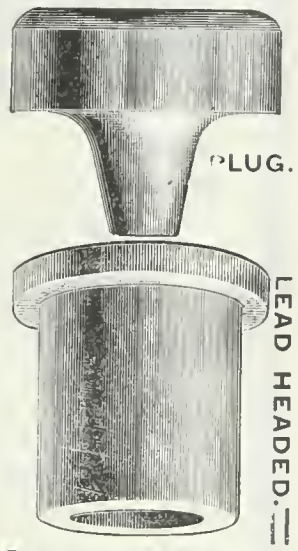
Bottling and Lock Cocks,
Kerosene Oil and Petroleum Faucets.
Fairy Hose Nozzles, Crown Water Filters, Towel Racks, Etc.

CONNECTING LEAD PIPE



Can be done by an ordinary mechanic in a few minutes with our die block and plug and an ordinary hammer.

Block and Plug Costs $1.00.



NOVELTY COUPLINGS,

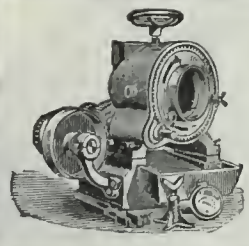
PATENTED MAY 28, 1901.

Lead to Lead and Lead to Iron or Copper. A perfect substitute for wiped joints.

SEND FOR COMPLETE CATALOGUE.

THE NEW HAVEN NOVELTY MACHINE CO., New Haven, Conn., U.S.A.

FORBES PATENT DIE STOCK



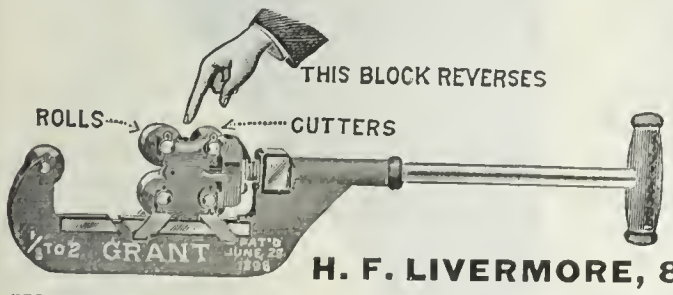
FOR HAND OR POWER.

Occupy less floor space, require less power to run, more simple of construction, far cheaper than any other machine of same range.

Send for Illustrated Catalogue. Manufactured by

THE CURTIS & CURTIS CO., 56 Garden Street, BRIDGEPORT, CONN.

THE GRANT CHANGE PIPE CUTTER.



ONE IS ENOUGH TO CARRY.

CUTS FROM 1/8 TO 2 IN.

Cuts with 3 cutter wheels, or with 1 cutter wheel and 2 rolls

Changes Instantly.

Strong, light and simple.
Nothing to get out of order.

H. F. LIVERMORE, 81 Pearl St., Boston.

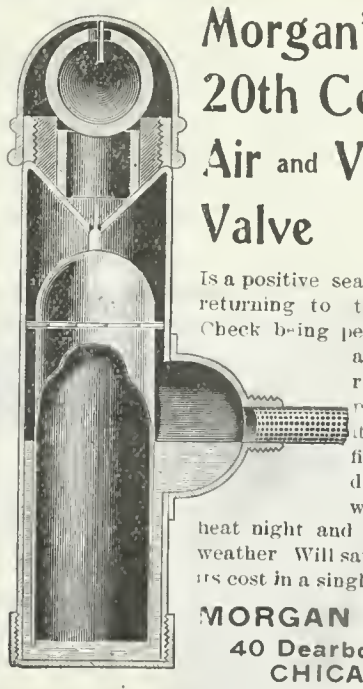
The No. 5 Fire Pot.

Is light, strong and capable of bearing hard usage. The flame is blue free from smoke and intensely hot. *heating the heaviest irons in half the time required by other makes.* The flame heats the coppers from heel to point, thus avoiding the common trouble of burning off the tinning. *The top section may be removed, thus exposing an open fire* which may be used as a torch. The flame may be applied directly to any seam on conductor pipe, cornice, or roof, causing it to part much quicker and easier than where an iron is used. We warrant it to please; your money back if it doesn't

$4.50 Net.

CLAYTON & LAMBERT MFG. CO.,

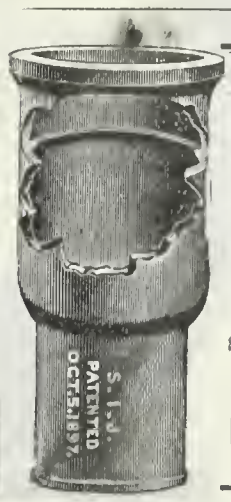
DETROIT, MICH.



Morgan's 20th Century Air and Vacuum Valve

Is a positive seal against air returning to the radiator. Check being perpetually balanced in water requires no pressure to lift it. A banked fire, with drafts closed, will maintain heat night and day in mild weather. Will save four times its cost in a single season.

MORGAN & CO.,
40 Dearborn St.,
CHICAGO.



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INSERTABLE

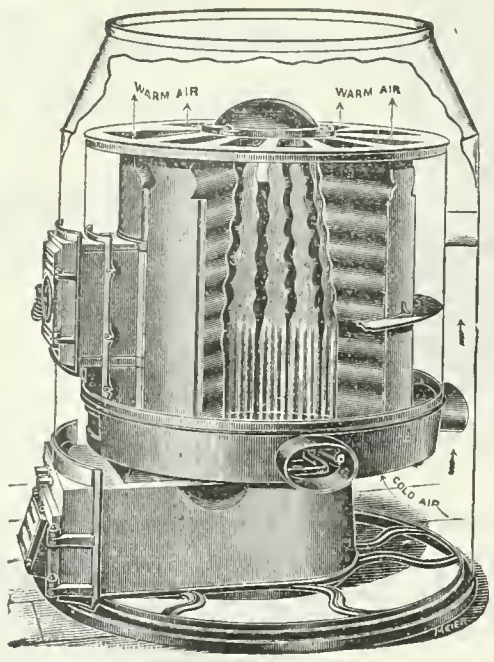
JOINT

FOR SOIL PIPE.

Sizes, 2 to 6 Inches.
Light and Heavy.
Saves labor, expense, and makes a neat job.

SEND FOR CIRCULAR.

R. Estabrook's Sons,
1st St., Boston, Mass.



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COOK & VAN EVERA CO.,
38-40 E. Lake St., Chicago, Ill.
Western Selling Agents.

JAMES SMART MFG. CO.,
Brockville, Ont.
Sole Manufacturers : : for Canada.

The Kelsey Warm Air Generator

SEE OUR EXHIBIT
AT THE
PAN-AMERICAN EXPOSITION.

World's Columbian Exposition, Chicago, 1893, Award, With Medals.

For a new and original, and very efficient form of Warm Air Heater, in which heavy cast iron sections, with corrugated sides, through which is circulated the fresh air, form the fire box and combustion chamber, and are exposed on all sides and throughout their length to the fire and hot gases, thus exposing an exceptionally large surface to the fire.

For the means whereby the warm air may be directed in separate and independent channels, and distributed in such proportions as to insure uniformity of heating in different parts of a building.

COAL HODS.
ELBOWS. STOVE PIPE.
DRIP PANS. ROAST PANS.
SPIDERS. GRIDDLES.
NATIONAL ACME FRY PANS.
COAL SHOVELS.

Send us your orders on any of the above goods, and they will be taken care of in good shape and at right prices.

NATIONAL ENAMELING AND STAMPING CO

Branch Offices: New York Baltimore Chicago Milwaukee St. Louis

THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, July 20, 1901.

DAVID WILLIAMS COMPANY, - - PUBLISHERS.

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ST. LOUIS.....1205 Chemical Building.
CLEVELAND.....312 The Cuyahoga.
LONDON.....Hastings House, Norfolk St., Strand.

Volume LVI.....No. 3
Index to Reading Matter.....Page 56

The Metal Worker Index.

The Index of the contents of Volume LV of *The Metal Worker*, covering the first half of 1901, is now ready for distribution, and will be sent to subscribers on application to the David Williams Company, 232-238 William street, New York City.

In order to relieve those who bind or file *The Metal Worker* of the trouble of future applications for the semiannual Index, we have prepared a special list of persons to whom, in the future, the index will be forwarded without further notice. Those who are now entered thereon will have the Index mailed to them.

Living in Glass Houses.

Aecording to Jules Henrivaux, a French glass expert, who arranged the famous "Palace of Light" at the Paris Exposition, and who was until recently director of one of the largest glass works in Franee, the next age is likely to be distingnished as an age of glass. Henrivaux maintains that glass will be the great building material of the future, being the best substance known for almost any kind of structural purpose, but especially for dwelling houses. In short, if his visions are realized, all the world will be living in glass houses before very long. The elaims of this glass enthusiast are founded upon the inexhaustible supply of the materials from which glass is made, from its adaptability to all shapes and forms, its durability and its eleanlIness. Practieally every part of a dwelling, aecording to Henrivaux, ean be constructed of this material. It ean be molded lnto cornices, slates, bricks, wall decorations, panels, paving stones, and, in fact, about everything that enters into the construction of a building. The foundations and walls can be eonstructed of a variety of glass reeently invented called "stone glass," which is sald to have already withstood the severest tests. When erushed it gives a resistance three times as great as granite, and when subjected to heat and eold it is found to be less sensitive than steel. A shock, such as a hammer blow, it is elalmed to reslst to a degree twenty-two times as severe as that which would fracture marble, while the test of tension has practieally no effect on lt whatever. The walls of such a house, as described by Henrivaux in the London *Daily Express*, would be built of glass, held together by angle iron, so as to permit of a hollow spaee through which pipes could pass (the plpes themselves being of glass) conveylng hot air, hot and cold water, gas, electrie wires, drain plpes, and everything needed for the health and comfort of the inhabitants. Stairs, balustrades, eeilings, wall decorations, floors, mantels and fire places all could be constrneted of glass. Moreover, even the household furniture and utensils could be made of vitrified material. Such a house would be absolutely clean and practically indestructible. The whole of the surface could be washed from top to bottom without any humidity being left, and dust would find no resting place upon the polished surfaces. As to the question of cost, this advocate of glass claims that such a house would be fully as cheap or cheaper than a house constructed of the building material at present in general use. Glass can be made out of anything amenable to the influence of fire. The stone glass referred to is manufactured almost entirely from wha has hitherto been regarded as waste substances, such as the slag from blast furnaces and mines. To avoid the monotony which one would naturally associate with sueh a house as that described, M. Henrivaux elaims that the glass can be shaped, colored and decorated to an extent of which no other material is capable, thus providing all the variety desired. How far such a building would make a comfortable dwelling place is a matter of doubt. One great advantage, however, possessed by a glass house filled with glass furniture would be its practical immunity from fire. It may just be pos sible that M. Henrivaux has hit upon a solution of the problem of the absolutely fire proof house.

The Growth of Urban Population.

The Census Bureau has issued a bulletin respecting the urban population of the country, which contains some interesting facts. It is shown that 28,411,698 people in the United States live in eities and towns of over 4000 population. This is 37.3 per eent. of the entire population of the country, a gain of nearly 5 per cent. since the census of 1890, when the percentage of urban population was 32.9. Compared with the returns of 1880 the report shows a gain in urban population of more than one-third in percentage, and of considerably more than double in actual numbers. There were, in 1880, 580 places of more than 4000 persons, with an aggregate population of 12,936,110, or 25.8 per cent. of the then population. About one-half of the nrban population in 1900 lived in cities containing over 100,000 people, of which there were 38. There are now 1158 places of over 4000 population in the country, as against 899 in 1890. In 1790 the inhabitants of cities of 8000 or more constituted oniy 3 per cent. of the total population of the country. This indicates a remarkable change in conditions. The showing supports the conclusion often expressed that the drift of the population of this country is strongly toward the eities and large towns, for the percentage of nrban population has been steadlly increasing since the first census of the country, taken more than one hundred years ago. While the cities and towns are rapidly increasing the number of their lnhabitants, the rural dlstricts in most parts of the eountry are at a standstill, and in some quarters show an actual decline in population. No doubt the improved means of communication, together with the material attractions of

the cities, have done much to draw away from their native territories the younger country bred generation. This tendency is by no means a new one, however. It is one that has been evident in more or less pronounced form for hundreds of years past in Europe. Nevertheless it is a problem to be reckoned with.

The volume of business which was done in the New York Stock Exchange during the first six months of the current calendar year was enormous. The sales of listed stocks amounted to 151,890,696 shares, an increase of more than 100,000,000, as compared with the first half of 1900. For the entire fiscal year ended June 30, 1901, the sales of listed stocks reached the unpreeedented total of 205,910,830 shares, or nearly 110,000,000 more than in the preceding year. Transactions in bonds during the first half of this year were almost equally remarkable, footing up to a par value of $542,430,200, being over $272,000,000 more than in the corresponding months of 1900. For the full fiscal year the sales of bonds reached a par value of $814,428,500, as compared with $522,529,100 for the preceding fiscal year.

The Employers' Association of Canterbury, New Zealand, and the Canterbury Trades and Labor Council have appointed a joint committee, consisting of five representatives from each body, to discuss trade matters in an amicable fashion. At the first meeting of the committee, recently held, the subject of "Preference to Unionists" was debated at some length. This appears to be a sensible movement, and carried on in the spirit in which it has been inaugurated it is calculated to improve the relations between employers and employed. By coming together in this manner outside of working hours and discussing topics of mutual interest in a friendly spirit, each party should learn to view things from the other's standpoint. Mutual respect should be engendered and many cases of irritation and antagonism be removed. The innovation is one which deserves to be tried elsewhere.

Dun's index number, covering 350 quotations for natural and manufactured products on July 1, shows a decline in the average of prices during June amounting to 2.4 per cent., and since January 1 of 4.4 per cent. Compared with the level of prices a year ago, however, there is practically no change. Going back to the corresponding date in earlier years it is found that quotations were much lower then than now, the average of prices being 6.8 per cent. lower on July 1, 1899, and 15 per cent. lower on the same date of 1898. These changes reflect the activity of trade and the greater prosperity of the people, as quotations always tend to rise in proportion to the increased demand and the ability of consumers to spend money more freely. Last year prices in many lines were unreasonably inflated, but a readjustment has taken place this year, bringing values of products down to a more substantial basis. The moderate decline this year indicates in a great measure the elimination of fictitious values.

From all sections of the country come reports indicating that the strike of the union machinists has virtually collapsed, there being now but a very few localities where there is even a pretense of its continuance. The fact that the machinists in their recent controversy did not hold the sympathy of the public explains in large measure the failure of the strike. Having entered into an agreement with the National Metal Trades Association to submit all disputes to arbitration, the International Association of Machinists violated the same, thereby vitiating the entire agreement entered into a year ago, which, it was hoped, would absolutely prevent any such trouble as that which has just terminated.

At Weatherford, Texas, the students of the International Correspondence Schools, Scranton, Pa., have organized the "I Can Succeed Club" and have secured rooms where they can meet and study.

The Strike in the Western Rolling Mills.

What is generally incorrectly referred to as the steel strike may profoundly affect the iron industry of this country for many years to come. It is on the broader question at issue that we propose to dwell, the immediate effects upon the business being dealt with elsewhere in this issue. We have entered upon the first trial of strength between organized labor and the most conspicuous of the modern industrial consolidations.

With the decline of the sway of the puddler, as the result of the change from iron to steel, the power of the Amalgamated Association of Iron and Steel Workers waned steadily. In number and in importance the nonunion mills developed. The long depression contributed toward weakening the union organization, which, however, gained strength again during more prosperous times. There can be little doubt that the energetic work of the union leaders, aided by favoring conditions, has much increased its power during the past two years. It is only natural, too, that the creation of a series of great consolidations and ultimately of one giant corporation must have impressed labor with the neeessity of drawing closer together. And it must be a strong argument for the leaders in seeking converts among the nonunion workers that the men practically in control of the operative departments of the principal corporations have for years successfully resisted any encroachments on the part of the Amalgamated Association. The recent merging of the National Steel Company and of the American Steel Hoop Company, the latter partially union, must have made that danger appear even more imminent.

It is true that the managers of the constituent companies of the United States Steel Corporation have consistently upheld the policy of maintaining the *status quo*. In this lies the great strength of their position, so far as it affects its influence upon general public opinion. How important a factor that may be it is difficult to judge. The press is apt to overrate it.

The contention of the manufacturers is undoubtedly sound, that they could not allow themselves to be forced into the position of coercing those of their men who do not desire to join the union into becoming members of the Amalgamated Association by signing the scale over their heads. On the other hand the Amalgamated Association claims that as a matter of fact the men in the nonunion mills have voluntarily joined their ranks, and proceeds to furnish proof thereof by calling them out, with the expectation of keeping them out. The officers of the organization claim that they have gone very much further than is generally suspected, and that they have in reserve ability to lay idle other important plants.

Doubt is thrown upon this statement through the course which they have pursued in the use of the plants of the American Tin Plate Company. That company had signed the scale. Practically all the plants are union mills. It did not need any exhibition of power to prove that fact. It was not alone a stupid breach of contract, but also a grave tactical mistake. It hurts the union more than it embarrasses the manufacturers. From a broader point of view it is an evidence of weakness.

There is one phase of the subject which has not been touched upon in the discussion of it which probably weighs more with the present management of the United States Steel Corporation, and that is the attitude of the Amalgamated Association as to output. Both the tin plate and the sheet mill scales fix maxima of production in a given time, a condition which is not tolerated in other lines in any of the great steel plants and rolling mills, and which would soon check that progress which is one of the greatest triumphs of the American rolling mill and steel works managers. Once firmly in the saddle, the Amalgamated Association would soon be found arrayed against the principle of getting the possible maximum out of plant by management and by constantly improving equipment.

In the trade the feeling is that for many reasons the men and the makers will not be allowed to drift too far apart, and that a compromise will be effected in which accomplished facts will be recognized and cardinal principles will be respected.—*The Iron Age.*

The American Society of Heating and Ventilating Engineers.

FOURTH SEMIANNUAL MEETING.

The fourth semiannual meeting of the American Society of Heating and Ventilating Engineers was held on Friday and Saturday, July 12 and 13, at the Victoria Hotel, Chicago. Tho following were in attendance:

Members.

J. H. Kinealy, Washington University, St. Louis, Mo.
R. C. Carpenter, Cornell University, Ithaca, N. Y.
W. M. Mackay, Hart & Crouse Company, New York.
A. Harvey, A. Harvey's Sons Mfg. Company, Detroit, Mich.
Alvin D. Reed, engineer Board of Education, St. Louis.
James H. Davis, Warren Webster & Co., Chicago.
A. G. Paul, the Paul System Company, Boston, Mass.
August Kehm, Kehm Bros. & Mectz, Chicago.
C. G. Folsom, South Bend, Ind.
A. T. Kellogg, Kewanee Boiler Company, Kewanee, Ill.
John D. Hibbard, John Davis Company, Chicago.
C. V. Kellogg, Kellogg-Mackay-Cameron Company, Chicago.
T. J. Waters, chief engineer Board of Education, Chicago.
C. M. Wilkes, Chicago.
J. J. Blackmore, J. L. Mott Iron Works, New York.

Guests.

S. F. McDonald, the Paul System Company, Chicago.
G. E. Downe, American Radiator Company, Chicago.
D. F. Morgan, D. F. Morgan & Co., Chicago.
Oliver Schlemmer, Jr., Cincinnati.
L. E. Riddle, Kansas City, Mo.
P. J. Markmann, Chicago.
Thos. K. Peters, St. Louis.
I. A. Hardy, American Tobacco Company, St. Louis.
Jas. J. McDonald, Chicago.
B. E. Van Auken, Van Auken Bros. Company, New York.
C. B. Thompson, American Radiator Company, Chicago.
Benjamin Kauffman, the Paul System Company, Cincinnati.
A. K. Park, the Paul System Company, Cleveland, Ohio.
James McAlear, the Paul System Company, St. Paul, Minn.
H. W. Ellis, Johnson Temperature Regulator Company, Chicago.
L. H. Drury, Jenkins Bros., Chicago.
D. E. McCabe, International Heater Company, Chicago.
J. F. Leslie, Mishawaka, Ind.
P. S. Hudson, Western Tube Company, Chicago.
J. F. Harmon.
Chas. M. Howe.
J. L. Welshaus.

Trade Press.

Chauncey Williams, *Engineering Review*, New York.
H. T. Sherriff, *Domestic Engineering*, Chicago.
Geo. W. Cope, *The Metal Worker*, Chicago.
E. E. R. Tratman, *Engineering News*, Chicago.
W. W. Macon, *Engineering Record*, New York.

FRIDAY AFTERNOON

The opening session was held on Friday afternoon with the following officers:

President, Prof. J. H. Kinealy of St. Louis.

Secretary, W. M. Mackay of New York.

The secretary read the list of nowly elected members, as follows:

Enoch Rutzler, New York.
Frank P. Blodgett, New York.
Charles R. Bishop, Lockport, N. Y.
George B. England, Brooklyn, N. Y.
August Kehm, Chicago.
Alfred S. Hamlin, Newark, N. J.
William K. Downey, Milwaukee, Wis.
Henry B. Gombers, New York, associate member.
Joel I. Lyle, Syracuse, N. Y., junior member.

After the roll had been called the president welcomed the members to the first meeting of the society that had been held in the West. He called attention to the high character of the papers to be read and invited free discussion.

An invitation was read from President Maguire of the British Institution of Heating and Ventilating Engineers, to attend their next meeting, to be held at Dublin on July 23 and 24. A suitable acknowledgment was ordered.

Papers.

Prof. R. C. Carpenter read a paper on "The Effect of Circulation on the Capacity of Fire Box Heating Surface." The paper was illustrated by large wall diagrams, which enabled the members to readily comprehend the apparatus employed by the author. Numerous questions were asked, most of which traversed the ground covered by the paper and simply called for more elaboration of the points made. The president said that he considered the most interesting result of the experiment was the increase of circulation with the increase in heat, which would seem to prove that a small boiler is more efficient than a large one.

C. G. Folsom read a paper on "Hot Air Furnace Heating," which was also illustrated by large sketches. A description was given of a heating job installed at South Bend, Ind., the building being exposed on all sides. The furnace used was a Hoffman tubular, furnished with a rocking grate. The furnace had 14 pipes. The stacks used were 4 x 12 and sometimes 4 x 14 inches. The house had 31,000 cubic feet to heat, while the capacity of the furnace is rated by the manufacturers at 30,000 to 40,000 cubic feet. Full details were given of the runs of pipe, air inlet, &c. Tho furnace has worked very satisfactorily, the temperature in the morning being 68 to 72 degrees. This was done notwithstanding the pitch of the pipes was only 1 inch to 10 feet, which is much less than is considered good practice, but which was rendered necessary under the circumstances. Circulation was, however, induced by a system of exhaust pipes, taking foul air from the rooms. Only 10 tons of anthracite coal were used during the entire heating season.

A short discussion ensued.

Prof. R. C. Carpenter then read a paper, presented elsewhere in this issue, on a "Test of Radiators with Superheated Steam."

The question was asked whether a point had been established by the experiments at which the greatest efficiency had been realized. Answer was given that this had not been established, but that the fact was demonstrated that the steam should be used at as low a heat as possible.

Mr. Paul raised the point that superheated steam absorbs water rapidly and thus the heat given out by radiator is affected by the condensation in the radiator, as the superheated steam enters the radiator at the bottom. Professor Carpenter combated this, stating that superheated steam being of the nature of air does not part with its heat rapidly and therefore does not quickly absorb water. Mr. Paul replied that he had not been able in his practice to carry superheated steam any distance. This point brought ont quite a protracted discussion.

Discussions.

Topical discussion was then taken up. President Maguire of the British Institution suggested the first question brought up, which was that of

Furnishing plans and specifications to architects without compensation.

Several members gave their views relative to this practice, and the sentiment appeared to be that it depended on the amount of business pressing. If a steam fitter had one job and 25 came up to be figured on the situation would be very different from having 25 jobs in hand and one to figure on. Secretary Mackay believed that through a conference with the American Institute of Architects this question will shortly be settled so that the heating engineer will be paid for his plans. Mr. Wilkes stated the difficulty in engineering large buildings, because of the conflict of wiremen, plumbers and steam fitters.

Is it advisable to advocate the adoption of the metric system?

Professor Carpenter opposed the metric system. He stated that the English regarded their currency system as a great educational advantage because without it the masses would lack the strong incentive to any men-

tal activity which comes from learning how to reduce English money.

Mr. Blackmore differed from Professor Carpenter, arguing in favor of simplicity in everything.

Mr. Hibbard also favored the metric system, especially in view of the growth of foreign trade.

The meeting then adjourned.

FRIDAY EVENING.

A paper was read by Alvin D. Reed of St. Louis descriptive of the heating system in St. Louis schools. It was illustrated by lantern slides, giving exterior views of two of the school buildings and plans of piping, air ducts, &c. The schools described are heated on the hot blast system, air being driven through steam heated coils by a fan operated by a steam engine. The engine is run by steam from the boiler used for heating the coils. The boiler is kept at 15 pounds or under, because of a city ordinance which permits steam systems of that pressure to be operated without requiring a licensed engineer.

Numerous questions were asked relative to details of the system, which were answered by Mr. Reed.

Topical discussion was then taken up and the following question was read:

What system of ventilation is most advisable for hospitals?

The president made some general remarks on this subject, hoping to induce a discussion, but either the hour was too late or no one felt sufficiently interested in it, and the convention adjourned.

SATURDAY MORNING.

W. M. Mackay read a paper, presented elsewhere in this issue, on "The Volume of Water in Hot Water Heating Apparatus."

In the discussion which followed Professor Carpenter said that the statistics given would be of very great value to engineers. C. B. Thompson gave his views relative to the construction of boilers to secure efficiency on the lines laid down.

Discussion.

Topical discussion was then taken up on:

What is the life of metal air ducts and under what conditions can they be dispensed with?

Messrs. Reed, Folsom and Mackay discussed this question. Mr. Mackay gave an interesting account of the method employed in the construction of air ducts in some large British institutions recently visited by him. In these buildings suitable flues were constructed in all walls or partitions and no metal ducts are used. The next topic discussed was:

Why not use small ducts, high velocities and high pressures in ventilating work?

Professor Carpenter, Mr. Reed and others contributed to this discussion, which favored large ducts and moderate pressures.

What is your experience as to the use of wrought iron or steel nipples in connection with cast iron radiators? was the next topic discussed.

Mr. Mackay said that his experience has shown that wrought iron nipples are all right. Trouble has arisen with steel nipples, but he believed because they have been made thinner than the old wrought iron nipple. Wherever trouble had arisen it was for some other reason than that the cast iron sections are put together with wrought iron or steel nipples. Mr. Blackmore said that steel nipples as now made are proving very satisfactory. Professor Carpenter had found in a number of instances that nipples had given way and believed that it was due to the water attacking the steel or wrought iron more actively than the casting.

The topic, *What has been your experience in the use of anemometers?* was then discussed.

This brought out an interesting statement from Professor Carpenter of the manner in which an anemometer should be used. Mr. Reed said it was a hard matter to get two readings alike. Mr. Folsom had tried to use the instrument but with little satisfaction. Professor Kinealy said that the fewer the parts the better will be the anemometer.

The Close.

The secretary stated that invitations had been received from local members for the society to visit important buildings in Chicago to inspect heating installations. In view of the fact, however, that the members desired to make visits individually, and it would therefore be difficult to make up a party or several parties, the thanks of the society were formally tendered for the invitations with regrets that they could not be accepted. The convention adjourned *sine die*.

The officers of the society are greatly pleased with the success of their first Chicago meeting, and believe that it will result in material additions to their membership. Quite a number of applications already have been received from those who attended as guests and thus had a practical lesson in the methods and benefits of the society.

David U. Cory.

The members of the New York City stove trade were greatly shocked by the sudden death from heart failure of David U. Cory, which occurred at the residence of his sister in Englewood, N. J., on Saturday, July 13. Mr. Cory was the head of the house of Uzal Cory & Co., New York City, one of the pioneer concerns in the manufacture of hot air furnaces. He entered the business as a young man and gave to it earnest study, which resulted in his acquiring an expert knowledge that was surpassed by few members of the furnace trade. Those who knew Mr. Cory will keenly feel his death, for he was a man who commanded the highest esteem for his altogether admirable character. All of his business dealings were characterized by the most unswerving integrity, which would not directly or indirectly countenance anything that savored of sharp practice. He was, moreover, intensely human in his interests, and inspired feelings of the warmest friendship among all who knew him. Mr. Cory was in his fifty-second year, and is survived by a widow, two sons and a daughter.

Garland Oak Stoves.

A trade edition of the *Garland Magazine*, just issued by the Michigan Stove Company, is devoted exclusively to Oak stoves. The company claim their line to be the most complete line of Oak stoves ever offered to stove buyers. It comprises the Oak-Garland, Jr., described as a good Oak at a moderate price; Oak-Garland, G series, with square base, described as a first-class and perfectly constructed Oak stove, perfectly air tight; New Oak-Garland, H series, square base, claimed to be the handsomest and best proportioned Oak stove now made; and Front-Flue Oak-Garland, described as "the selling sensation of the age," being of original construction, giving two large front full base heating and self cleaning flues to an oak stove. All these styles are handsomely illustrated and fully described in the magazine. Construction details are separately illustrated, such as the combination screw register and grate shaking door and the gas burning fire pot. The former is a device for absolutely sealing a stove and thus making it air tight, while the latter secures through a supply of heated air intense and perfect combustion in the fire pot. These stoves are adapted to the use of hard or soft coal, coke, lignite or wood.

W. F. Adams, 1829 Adams street, Toledo, Ohio, who makes a specialty of the Kelsey Warm Air Generators, is sending to possible Furnace customers an invitation to examine the apparatus. The letter inquires if thought has been given to the character of the air found in the average home, and calls attention to the disadvantages of overheated air and the effect of outdoor exposure on those who breathe it. He further states that a pure, mild, warm atmosphere can only be secured by passing pure, fresh air in abundant quantity over radiating surfaces that are not overheated.

AMERICAN STOVES IN EUROPE.

BY CHAS. F. HAUSS, BERLIN.

Before an American stove manufacturer tries to do business in Europe, the writer would advise him to make a study of the conditions, fuel, &c., and learn exactly what is wanted. His printed matter should be in German and French, all dimensions and weights in the metric system of weights and measures. It is important to give either the fire or heating surface of the stove in square meters or the number of cubic meters of space it will heat, approximately.

To send out English printed matter is a waste of money, and to insure the reading and consideration of any catalogue or circular it is absolutely necessary to put sufficient postage on it, for nothing will anger a European quicker than to receive mail with short postage—as the law here compels the receiver to pay the shortage as well as a fine of 100 per cent.

American stoves are used to some extent, but only with anthracite coal, and then only with changes in the draft doors, &c., to suit European ideas. Several German manufacturers make what they call an "American stove system Perry," in round and square form, but there is little demand for them owing to their being limited for economically burning anthracite coal only, which is very expensive. The fuel most used is gas coke and briquettes made from lignite or brown coal.

For the successful and economical burning of coke a flat, permanent grate is necessary, with 33 1-3 to 50 per cent. of air space, that is divided into ⅜ inch to ½ inch spaces of air and iron. In connection with this grate there should be provided a clinker door and screw draft regulators, such as are used on American Oak stoves.

For burning briquettes a very fine grate with, say, ¼-inch air spaces or just a flat plate is used. These briquettes or pressed coals are made of lignite dust and screening, held together with some adhesive compound and pressed into the shape of bricks and eggs. When this fuel, as well as the coke, is in a certain state of combustion on a shaking, revolving or coarse grate, and there is a violent movement of the same, it runs through the grate like water through a sieve, with the result that the grate is burned out. Hence the absolute necessity of providing a flat, permanent grate.

Care must be used in the fitting of all doors and parts so that positive regulation of the drafts is possible, and where coke is to be the fuel a magazine is indispensable. The American Oak stove comes nearest the European idea and lacks only the grate above mentioned. Where this stove is made entirely of cast iron—that is, without the sheet iron casing, it would be best received and have the advantage of a lower duty.

Packing stoves for export is a very important matter, not only to prevent breakage due to the frequent and rough handling the goods receive, but to reduce the duty. For instance, if a door has brass hinge pins in it or a nickel plated handle on it, the whole door will be weighed and duty charged at the rate of brass or nickel plated ware; or if a nickel plated rim be fastened to a stove body the whole body would be weighed as nickel work. Hence the importance of packing each class of material separately. I give here the duty into Germany:

Rough or unfinished castings, 27¼ cents per 100 pounds.

Fitted or partly finished castings, 65 cents per 100 pounds.

Polished cast iron or wrought iron work, $1.10 per 100 pounds.

Nickel plated or brass parts, $2.60 per 100 pounds.

The duty on fitted castings into Russia is practically prohibitive, being $5.40 per 100 pounds, while the duty on the same goods into France is $2.25 per 100 pounds, into Switzerland 55 cents per 100 pounds, and into Austria $1.72 per 100 pounds. Holland imposes only 5 per cent. ad valorem and Belgium 15 per cent. ad valorem.

Finally, the salesman sent must know all about the goods he tries to sell, be prepared to answer an unending lot of questions, and his patience must have no limit.

THE CHICAGO HEATER & SUPPLY COMPANY, Chicago, have been licensed to incorporate with a capital stock of $25,000 for the purpose of manufacturing and dealing in Furnaces and Heating Supplies. The incorporators are C. M. Converse, T. B. Emery and E. B. Smith.

THATCHER RANGES.

As evidence of their desire to aid their customers to secure a generous proportion of the range trade, the Thatcher Furnace Company of 240 Water street, New York, have just issued a 24-page catalogue devoted to the Thatcher ranges. It is 10½ x 7½ inches in size, in a three-color effect, with a light maroon for the background. The title page of the catalogue bears the name and address of the company and the names of the officers. The statement is also made that the business was established in 1850. The general office and salesroom of the concern are at 240 Water street, New York, while their manufacturing plant covers an entire block in Newark, N. J. The introduction calls attention to the excellent reputation enjoyed by the Thatcher ranges, due to the many features of excellence and convenience provided in their construction, and announces the addition of some new goods to the line. It also states that the company are manufacturers of hot air furnaces, combination heaters and steam and hot water boilers. Another page gives terms and suggestions for aiding the prompt shipment of orders.

The earlier pages of the catalogue are devoted to the Thatcher double oven range, made with low warming closet, adapted for use with a high shelf and canopy, and for setting between brick jambs or against an enameled brick back. This is followed by the Thatcher single oven range, which is made both right and left hand, and provided with water back suited for heating large vertical boilers, or supporting horizontal boilers. These ranges are furnished with canopies, low warming closets and warming shelves, and are also adapted for setting between brick jambs or against enameled brick backs. They are all provided with the Thatcher patent triangular revolving grate. In addition to their already extensive line of these ranges a new size makes its appearance with this catalogue, having six 7-inch holes, an oven 14 x 15 x 10½ inches, and a top 34 x 25½ inches in size.

Several pages of the catalogue are used to introduce the Thatcher French steel ranges, made with both single and double ovens. These ranges are offered in various sizes and styles, adapted for hotels, institutions, apartment houses, family use and steamships and yachts. Two pages are occupied by the Active laundry stoves, with a two-hole boiler top and capacity for heating nine irons on the side, and the Sterling hot water laundry stove, having a square, flat top. One page is devoted to pictures of the Thatcher tubular furnace and the Thatcher sectional steam boilers, and the text invitingly presents the features of these apparatus for consideration. A picture of the company's plant at Newark, N. J., is given on the last page.

White's Stoves and Ranges.

The Thomas White Stove Company, Quincy, Ill., have favored us with a copy of their thirty-ninth annual catalogue and price-list. This is a handsome publication, comprising 112 pages, and is substantially bound in cloth with a gilt title on the side. The goods shown cover a very full line of coal and wood cooking goods, as follows: Maxim steel range, in four sizes; Model steel range, in eight sizes; Model steel cook, in five sizes; Peerless steel range, in eight sizes; Peerless steel cook, in five sizes; Rival steel range, one size; Rival steel cook, one size; Victor cast range, six sizes; Prize cast range, seven sizes; Clipper range, three sizes; Victor cook, five sizes; Prize cook, four sizes; Winner cook, three sizes; Clipper cook, three sizes; Harmony cook, two sizes; Grand cast range, six sizes; Herald range, five sizes; Champion range, four sizes; Magnet range, three sizes; Grand cook, three sizes; Herald cook, four sizes; Champion cook, four sizes; Magnet cook, three sizes; Premium cook, three sizes; Gem City cook, six sizes; Pride cook, two sizes.

The display of heaters embraces cast and sheet iron

Todd stoves, box stoves and drnm stoves for wood and Oaks and air tights for coal. They are named as follows: Royal Princess, Princess, Rainbow, Novelty, Ruby, Derby, Ocean Wave, Snowbird, Trinmph, Hot Blast, Snperb, Poplar, Argus, Reward, Jewel, Trump, Climax and Silver.

As a distinctive name, nearly all the stoves put out by this company bear the prefix "White's."

The Jahant Furnace.

A new catalogue devoted to the Jahant hot blast furnace has jnst been issued by Rohrbacher, Allen & Jahant, Akron, Ohio. It consists of 64 pages bonnd in a drab cover, printed in red and blue and showing a broken view of the furnace. The introdnction states that no changes have been made in the construction of the furnace, but that a one-piece cast iron radiator has been added to the line, adapting it for a wider nse. The text treats in detail of the construction of the fnrnace and dwells largely on the method of snpplying a blast of hot air at the snrface of the fire, promoting combnstion of such a character that when the varions grades of soft coal are consumed, the usual deposits are avoided, and the carbon that is ordinarily carried off in the form of dense smoke is consumed usefully for the generation of heat. The catalogue gives fnll instructions for setting the furnace and for regulating it in use.

In order that its constrnction may be thoroughly nnderstood views are presented showing the fire pot, which is made in two pieces, and the grate construction, which is of the labor saving type. Water coils for heating a water tank or radiators are also shown. Separate views are given of both steel and cast iron radiators, also the company's draft regulator. One page contains a table giving fnll dimensions and capacities of the furnace, and another page has dimensions for making the casings of the five different sizes of Jahant furnaces. Price-lists are also given of different styles of radiators. Under a separate head are suggested important questions which must be considered in heating buildings, and excellent information is presented in reference to chimneys, it being pointed out that the successful operation of any heating apparatus depends on the chimney draft. The last half of the catalogne contains testimonials, inclnding 18 pages of letters giving detailed information of the fuel consumption and heating capacity of the furnaces from those who have used them in stores, chnrches or residences. The book closes with a long llst of names of churches, schools, public bnildings and residences where the Jahant hot blast furnace is giving satisfactory service to the user.

Red Cross Stoves and Ranges.

The thirty-fifth annual catalogue of the Co-operative Foundry Company of 15-19 Hill street, Rochester, N. Y., is a handsome publication of 144 pages, printed in two colors upon a good quality of paper, profusely illnstrated with well executed engravings of an extensive assortment of attractive goods, and bound in flexible covers of appropriate design. The main feature of the cover is a section of a molding floor, with a molder represented carrying a ladle of molten metal. At the right and left hand in red are *fac-similes* of the company's Red Cross trade-mark, with the dates 1901 and 1902, while in the lower left hand corner is the address of the company, with the number of the catalogue. Jnst before the title page are two views of the company's works, one representing the offices, fonndry and warehonse on Hill street, and the other the foundry and warehouse at Lincoln Park.

In their introdnction to the trade the company state that they will "spare neither pains nor expense to perpetuate the high degree of popularity which has been secured for the Red Cross products, and to maintain the standard of excellence in the device and design in pattern construction." The leading place is given to the Red Cross Victor, a new steel range of fine proportions and rich exterior. Constructively it embodies the latest improvements and is offered in the usual styles and sizes, several of which are illustrated. The Red Cross Princess is another member of this class of range, following which are cast goods. The ranges occupy something over 40 pages of the catalogue, after which attention is given to gas cooking attachments with directions for use, these in turn being followed by cooking stoves, which occupy 15 pages, all being offered nnder the generic name Red Cross. The heaters, with the Royal Red Cross in the leading place, take up, in connection with the Red Cross warm air furnaces, farmers' boilers, kettles, stove hollow ware, &c., the remaining portion of the catalogue. A feature that will be fonnd of special interest is the directions for operating stoves, issued by the National Association of Stove Mannfactnrers, and extracts from various pnblications respecting chimneys, drafts, &c.

Quick Meal Steel Ranges.

The Ringen Stove Company, 410-414 North Sixth street, St. Lonis, Mo., have just issned what is known as Catalogue No. 48, covering the season from July 1 of the present year to Jnly 1, 1902. The 48 pages are devoted to illustrations of the Quick Metal steel ranges, which are offered in a great variety of styles and sizes adapted to meet many reqnirements. Specal attention is called to the fact that the walls, consisting of heavy cold rolled steel, are dipped and finished in black enamel and baked in a kiln at 300 degrees F. This, it is claimed, gives a smooth, hard and glossy finish and one that is much more satisfactory than if the metal was palnted. The oven top and sides are made from one piece of heavy steel, the top being arched so as to make it especially strong. The oven door is double, with an air space between the two sheets, which ventilates the oven and tends to prevent the nickel from tarnishing. The fire box is large and the grate is of the duplex variety.

A line of ranges entirely separate and distinct from tho enameled line is made with a body of pollshed blue steel. The fire box is made in one size only, the linings are sectional, ventilating and heavy, and the oven is made of one solid piece of steel, as is also the oven door. Several pages in the catalogue are devoted to cuts for advertising purposes, a series of testimonial letters from some of those who have used the Quick Meal goods and some remarks about private postal cards which the company have issued, giving inside and ontside views of the Quick Meal factories and the Ringen Stove Company's bnilding.

Welcome Stoves and Ranges.

Among the more attractive trade pnblicatlons which have reached onr desk thns far in the present season may be mentioned the catalogne of Welcome stoves and ranges, agricultural furnaces and dealers' snpplies jnst issued from the press by the Syracnse Stove Works of Syracnse, N. Y., and with New York City office at 231 Water street. The form of the catalogue, or rather the shape of the page, differs somewhat from the general rnn of stove trade publications in that the hight of the page is very much greater than the width, the printed matter being so presented as to leave an unusnally wide border at the top and bottom. This, with the two-color work, gives a very rich effect as one runs over the pages. The binding is in deep green paper covers, embellished with an old gold panel, carrying in black and green the words which constitnte the title of this revlew. Beneath the panel in the same general style of treatment are clasped hands, symbolic of "Welcome."

In referring to the constrnction of their goods the company state that the cast iron composition entering into them is especially selected and scientifically blended, giving an iron of great strength, tenacity and wearing qnalities. The mounting and fitting of the stoves is done by day labor and not by the piece, while particular attention is given to the nickel plating and metal work. Throughont their entire establishment the machinery nsed is of the latest labor saving and improved description, and it is by giving careful attention to such details that the company are able to tnrn ont snperior goods. The Welcome ranges occupy one-half of the catalogne, or 50 pages, with the following 12 pages devoted to cook stoves and the remaining portion to heaters of varions kinds, caldrons, price-lists of fire brick, directions for operating the stoves, and a comprehensive index alphabetically arranged.

ODD PLATES.

FURNACEMEN who use a drawing board in preparing working plans for their furnace work will be pleased to receive from Isaac A. Sheppard & Co., Philadelphia, a little board containing a set of thumb tacks. These thumb tacks alternately bear the words Paragon Furnaces and Boilers and Excelsior Stoves and Ranges, the names Paragon and Excelsior being in red and the other lettering in blue on a white ground.

THE SPRINGFIELD FURNACE COMPANY, Springfield, Ohio, are just sending to the trade a 34-page catalogue descriptive of the Thompson Warm Air Furnace, designed for using natural gas or oil fuel. The Furnace is of a construction which exposes a large amount of hot surface to the air passing through it. The gas or fuel burners are placed in a chamber and the products of combustion rising from them not only take an indirect course through the apparatus, but are thoroughly distributed over the surfaces presented. The catalogue has much to interest the Furnace heating contractor in districts where natural gas or oil is used for fuel.

AT the annual meeting of the stockholders of the Somerset Stove Foundry Company, held at their office in Somerset, Mass., the following officers were elected: President, A. H. Hood of Fall River; treasurer, William H. Tallman, and clerk, D. Borden Davis. The directors include A. H. Hood, A. N. Lincoln and J. D. Flint of Fall River; G. E. Marble, William H. Tallman and D. B. Davis. The auditor is Charles S. Simmons. Among the shipments recently made by the company was a consignment of 90 Ranges to a firm in San Francisco, which, it is expected, will take 360 Stoves per year from the company. Business prospects are said to be brighter than ever.

SOME extensive alterations are being made at the works of the Rossmore Company in Peekskill, N. Y. In order to accommodate their increasing business it has been found necessary to erect an addition and make some other changes which will place them in a position to more promptly meet the demands of their trade.

THE PRIZER-PAINTER STOVE & HEATER COMPANY of Reading, Pa., have found it necessary, on account of the rapid growth of their business, to increase their capital stock from $200,000 to $350,000.

DURING the recent hot spell Gould & Fruchey, proprietors of the Marion Stove Works, Marion, Ind., closed their plant for a week in order to give the men a much needed rest and to make some necessary repairs.

THE COLLINS & BURGIE STOVE COMPANY, at Marengo, Ill., shut down the second week in July for the usual inventory and in order to make some necessary repairs and alterations. We understand that the past year has been one of the most successful since the works were started, and the prospects are very flattering for the future.

GEORGE D. ROPER, president of the Eclipse Stove Company of Rockford, Ill., was recently in New Orleans in the interests of his company, calling among others upon the manager of the New Orleans Lighting Company, relative to increasing their supply of Gas Stoves. Mr. Roper states that the demand for Gas Stoves in New Orleans exceeds anything in the history of the business, so far as he has knowledge. He is of the opinion that New Orleans is better adapted than any other city to use Gas Stoves, the climate rendering them a necessity on account of their cleanliness and the readiness with which they may be put in and out of operation. We understand that he secured an order for 4000 Stoves, to be shipped as soon as they can be gotten out.

THE BUCKEYE FOUNDRY COMPANY of South St. Paul, Minn., have recently taken out a permit for the erection of a factory to be located on the west side. We understand that the product of the new concern will be Stove Castings and Repairs.

THE SCRANTON STOVE WORKS of Scranton, Pa., have erected an addition to their foundry which will give them accommodations for 25 more molders. The company are bringing out several new Ranges and Parlor Stoves, and the works are busy in all departments.

IF the vaticinations of the Gobeille Pattern Company, Cleveland, Ohio, are to be believed, the long looked for consolidation of the Stove plants of this country will shortly be an accomplished fact. It is possible, however, that this enterprising firm of pattern makers have rashly dipped into the future merely for the sake of argument, they holding that if the companies are to enter the consolidation the more new and up to date lines of Stoves they possess the better the price they will secure. Therefore, the end of the argument is, get new patterns and, of course, go to the Gobeille Pattern Company for them.

THE SIMPSON STOVE & MFG. COMPANY of Pittsburgh, Pa., are distributing a four-page folder calling attention to Simpson's Gas Range intended for using natural gas as a fuel, the Duquesne Cookers and Ovens, and to the Duquesne Hot Plates, which are made with two and three burners. The Gas Range has four large cooking holes in the top surface, with removable rings, and four top burners. The oven is square and ventilated, and the broiler is equipped with pan and rack. The body is made of sheet steel, asbestos lined and finished in hard baked japan. The oven door frame, name plate and lower door and valve line are highly nickel plated.

THE READING STOVE WORKS, Orr, Painter & Co., Reading, Pa., are distributing among the trade a six-page folder setting forth the merits of the Sunshine Oak, which has been remodeled and improved for the present season. It is made in five sizes and so constructed as to produce a maximum amount of heat from a minimum quantity of fuel. It is supplied with grates for hard coal, soft coal or wood, which are interchangeable without trouble or inconvenience. The shaking grate is on rollers, making its operation smooth and easy. The Sunshine Oak is also made as a double heater and is of handsome exterior.

TRADE NOTES.

H. R. BRUCE & Co., manufacturers' agents, whose office formerly was at 418 Pike Building, Cincinnati, Ohio, have removed directly opposite to 419 in the same building. The change was made in order to secure greater space for the display of samples of which the firm carry an extensive line.

THE E. F. REECE COMPANY, INCORPORATED, of Greenfield, Mass., have issued a 64-page catalogue of their Screw Cutting Tools for machinists, blacksmiths, bicycle and electrical work.

THE WITMAN MFG. COMPANY, Columbus, Ohio, are distributing a small four-page circular relating to their Incandescent Mantles for natural, artificial and gasoline Gas Lamps.

THE NORTH CAROLINA MICA COMPANY of Boston, Mass., have shipped a large lot of their product to the London market.

THE ACORN BRASS WORKS, Chicago, Ill., are making some substantial shipments of their specialties to Cape Town, South Africa.

THE UNITED SCRAP IRON & METAL COMPANY, 515 Baltic avenue, Atlantic City, N. J., have been incorporated with a capital of $10,000 by John McBlane, James Lamont, Edwin Denny, Edwin W. Edwards and others, to deal in Scrap Iron and Metals.

THE REFLECT INCANDESCENT LAMP COMPANY of Phillipsburg, N. J., have been incorporated by James W. Cowell, Howard P. Kinsey and others with a capital of $300,000, to manufacture Lamps and Reflectors.

THE New York branch of the Joseph Dixon Crucible Company, 68 Reade street, has just been thoroughly overhauled and renovated, even to new fronts, signs, &c. Inside, a new metal ceiling, tinted in colors, has been put, new system of electric lights installed, and the interior painted and renovated throughout.

THE WESTERN STAMPING & ENAMELING COMPANY have been incorporated by W. H. Sweeney, W. K. Gore and others, with a capital stock of $100,000, to operate the enameling works at Dubuque, Iowa. W. H. Sweeney will act as manager.

Protector Woven Steel Covered Hose.

The National Supply Company, 5 and 7 West Lombard street, Baltimore, Md., whose New York agents are Allerton-Clarke Company, 97 Chambers street, have just put on the market the Protector woven steel covered hose, as here illustrated. The galvanized spring steel covering, which permits the hose to be coiled for shipping or putting away in small compass after use, also makes it especially desirable for air, steam or water high pressures, the manufacturer guaranteeing it up to

Protector Woven Steel Covered Hose.

1000 pounds pressure to the square inch for garden hose. The spring steel covering is tightly braided upon the hose by special machinery, a point being made by the manufacturers that the thin metal strips thoroughly galvanized are closely woven with a snug, even pressure from every point, instead of being pulled over the hose, which, with round wires, sometimes cuts the outer covering. This method of protection gives an even outer surface, so that it can be drawn over lawns or such rough surfaces as in quarries, shipyards, boiler shops, &c., for a variety of purposes. They particularly recommend it for pneumatic tools and all uses demanding conduits capable of resisting continued pressures of great force. If the strips were deliberately cut at a given point the next meeting point of the strips would prevent any release unless every intersection was cut, which is a great advantage. It is extremely flexible and can be tied in a comparatively small knot without kinking. The ½ and ¾ inch hose for air or steam is guaranteed by the makers to stand an air or hydraulic pressure of 2000 pounds to the square inch. The 1-inch diameter will stand 1500 pounds to the square inch without bursting, it is said, these statements applying to four-ply hose. Three ply will stand 25 per cent. less and five-ply 20 per cent. more. This style of hose is made in ⅜, ½, ¾, 1. 1¼, 1½, 2, 2¼ and 2½ inch sizes, the company now building machines for weaving hose up to 5 inches diameter.

Bad Accounts.

A recent happening in a country hardware store, whose proprietor was temporarily absent, is a striking example of the unbusinesslike way in which credit is extended in some (it is hoped not many) stores. The circumstances were as follows:

An old man had made a purchase, and when the clerk handed him the wrapped parcel the customer leaned over the counter and said: "You will have to chalk it." "What is your name?" asked the clerk. "It's over there," said the old man, pointing to the ledger on the desk. "I am hard up now." Again the clerk inquired his name, to which a bystander replied "Jones." So the goods were charged to "Jones."

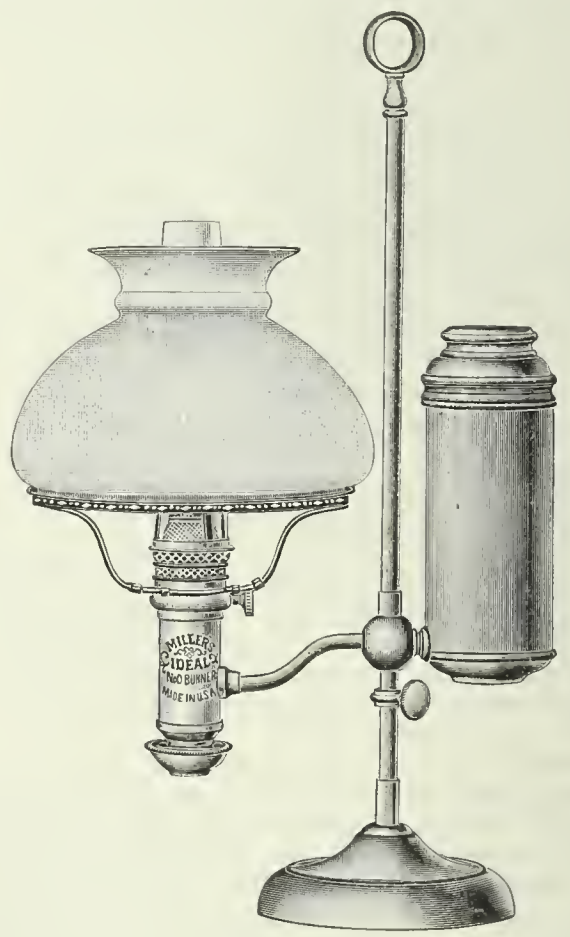
The old man was evidently unknown to the clerk; and, although the customer might have been like a "singed cat," "better than he looked," it was not a good basis for enlarging an account which the clerk knew nothing of.

He took the old man's word that he had an account, and he accepted the fact that the bystander knew the customer's name as a quasi guarantee that he was "all right."

It is obvious that this charge should not have been made without investigating the right the purchaser had to having the goods charged; and even if he was "all right," the charge should never have been made without ascertaining his initials or first name. Carelessness in these and similar regards is a fertile cause of bad accounts.

Miller Ideal Student Lamp.

Edward Miller & Co., Meriden, Conn., and 28-30 West Broadway, New York, have just put on the market the Miller Ideal student lamp, as here shown. The novelty of this lamp is in the greatly improved form of wicking device, by means of which a positive and even action is produced. The tubular wick, the burner being of the central draft order, is slipped into a cylinder of perforated brass, the inner gear wheel fitting into the perforations no matter how the cylinder is put in and lifting or depressing the wick so that a steady, uniform flame is obtained. The advantage of this lamp is that there is little heat, no shadow and oil always level with the



Miller Ideal Student Lamp..

burner, which insures a better illumination. They are made in three sizes, in both single and double styles, and they can be furnished in either brass or nickel plate.

The Eversole Iron Company, Ft. Wayne, Ind., are manufacturing a self heating Sad Iron which is a new invention and has just been placed on the market. This Sad Iron is operated by means of gasoline, the burner being placed in the center of the Iron just above the base, which is heated by the flames from the burner impinging on it. The company manufacture two sizes of Irons, one being intended for family use and the other for tailors.

Reflectors for Acetylene Lighting.

Acetylene having come so rapidly to the fore of late, every one in the trade can well afford to know something about it. Such knowledge is very likely to prove useful sooner or later. In this connection those interested in the subject will doubtless find the catalogue of lighting fixtures issued by I. P. Frink, 551 Pearl street, New York, a valuable help in their research after more light. The catalogue covers a very complete line of lighting fixtures for all purposes and for all classes of buildings, stores, show windows, churches, halls, &c., and the firm are always glad to supply any needed information not found within its covers. A very good sample of their work in the acetylene lighting line is shown in the Railway Station Building and the Machinery and Transportation Building at the Pan-American Exposition, Buffalo, where they have 32 of their reflectors in use in lighting these buildings. They give a splendid, even light, make a fine show, and have been very favorably commented upon both as to lighting capacity and appearance.

Stove and Hardware Dealers.

JOHNSON HARDWARE & IMPLEMENT COMPANY, Altus, O. T., have recently opened a branch store at Navajo. Their business is retail and the line handled covers Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, Harness, Wagons, &c.

J. B. GREEN has bought out the Hardware and Stove business formerly conducted by F. D. Gates at Oelwein, Iowa.

EVANS HARDWARE COMPANY, Statesville, N. C., have just been incorporated under the laws of that State, and will open up with a stock of Hardware, Stoves, Agricultural Implements, Paints, Oils, Varnishes, &c., on August 1. Mr. Evans is no longer connected with the Flanigan-Evans Hardware Company of Statesville, the style of which firm has been changed to J. P. Flanigan's Sons Company.

THE Hardware and Stove store conducted by W. H. Plank at 621 Kansas avenue, Kansas City, Kan., was destroyed by fire a short time since.

HEYMANN SUCESORES, Mazatlan, Sinaloa, Mexico, are intending soon to erect a new building for their Hardware business, and in connection therewith request from manufacturers catalogues relating to Store Ladders, Joist Hangers, Elevators, Metal Ceilings, Office and Store Furniture, Skylights, T Rails, Iron Railings, Iron Wire Office Guards, Windows, Doors, Blinds, &c. The firm would also be pleased to have information as to prices on the above so as to save time in ordering.

THE SMITH & EGGE COMPANY, Bridgeport, Conn., and 62 Reade street, New York, have just received from a customer in New Plymouth, Taranaki, New Zealand, a letter together with photographs and a copy of the local paper, which indicate the effectiveness of their Yankee Rat Trap during the bubonic scare. The catch of rats at one setting was 25, the previous night 11, with a total of 82 in one week.

THE SIMMONS HARDWARE COMPANY, St. Louis, Mo., have been incorporated with a capital stock of $4,500,000. The reincorporation was effected because the charter of the company had expired, and it is explained by one of the officers of the company to mean simply a transfer of old for new stock certificates. No change of any kind is entailed in connection with the company in consequence of this reincorporation.

A FIRE which occurred recently in the store of L. J. Cowles, St. Mary's, Kan., did a damage of some thousands of dollars to the stock of Stoves, Implements and other goods carried by Mr. Cowles. The loss is fully covered by insurance.

The International Correspondence Schools, Scranton, Pa., call attention to the fact that instruction is given throughout the entire year, the vacations of the principals and instructors being arranged so that there is no interruption in the work of the schools. This affords an opportunity for mechanics and others who have a dull season during the summer to take up a course by mail and make good use of what would otherwise be waste time.

NEW YORK TRADE SCHOOL CATALOGUE.

The great benefit derived by those who in the past have taken a course of instruction in the New York Trade School, at Sixty-seventh street and First avenue, New York, has made that institution popular throughout the United States, and there is no doubt that many young men who aspire to gain a mastery of some mechanical trade are already awaiting the appearance of the catalogue for the coming season. This publication has just been issued for 1901-1902, being the twenty-first school year. It consists of 44 pages and gives a list of the courses of instruction in the different trades, with half-tone engravings showing the different shops and examples of work done by the pupils.

The school was founded in 1881 by the late Col. Richard Tylden Auchmuty. Its purpose, as outlined in the catalogue, is to provide young men who have a bent for mechanics the opportunity of acquiring a knowledge of some trade that will be to its possessor the means of livelihood. The special advantage of the school is that whatever trade is selected, the pupils are in charge of competent instructors and assistants so that a thorough mastery of the handicraft may be gained by those who give their time and attention to the instruction received. In addition to teaching how to handle the tools and perform the manual labor of doing the work, lectures are given which thoroughly explain the principles governing the work. The pupils are also taught something of mechanical drawing and good business methods. Instruction is provided in both evening and day classes.

The evening classes for the twenty-first year open on October 14, 1901, and applications for entrance into these classes should be made before October 1. Those departments in which the readers of *The Metal Worker* are specially interested are the evening classes in plumbing, steam fitting and cornice work. Instruction in these subjects is given on Monday, Wednesday and Friday evenings from 7 to 9.30 o'clock. There are also day classes in each of these branches, those for plumbing and cornice work opening on December 9, 1901, while the steam fitting term begins January 6, 1902. Instruction in the day classes is given daily from 8.30 a.m. to 4 p.m., except on Saturday, when the school closes at noon.

A new class this year is an evening class devoted to wood pattern making. The instruction, in addition to teaching the use of the ordinary hand tools, will also include wood turning as relating to pattern making, and the course will embrace the making of pipe elbows, tees, core boxes, pulleys, propeller wheels, and various parts of machines. Drawing will be taught in connection with the practical work. Instruction will be given on woods and their grain as best adapted to pattern making, drying and seasoning materials, their weight and shrinkage, shrinkage of patterns and castings, making of cores and the material required, and varnishing patterns.

In addition to this instruction for young men, there will also be inaugurated a series of lectures for journeymen by A. A. Hamerschlag, on electrical work, and on steam engineering work. Each course will consist of ten lectures which are intended to provide information of value to a journeyman in practical work. The charge for a season ticket for either course is $1. A circular giving the subject and date of each lecture can be secured on application. Those who intend to take a course at the school this year should early secure a copy of the catalogue and place their application on file.

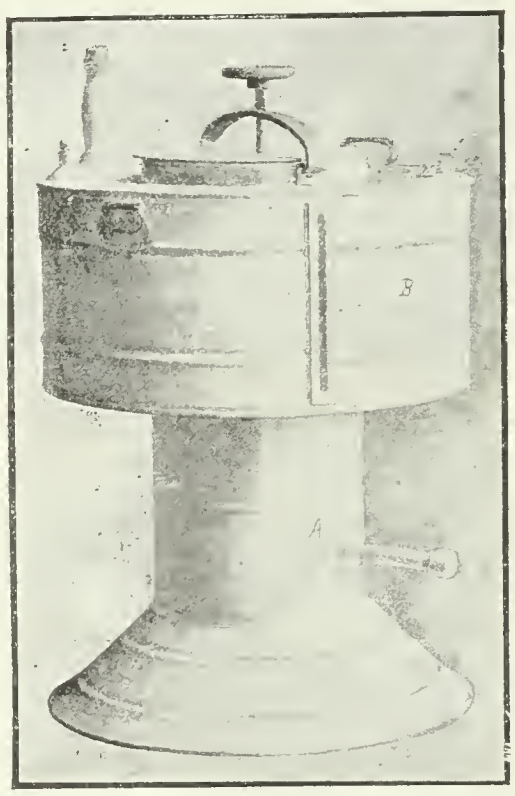
A course which has been notable for the excellence of the work of the pupils both in pattern cutting and in the articles made, is that devoted to cornice and skylight making. Last year the day class received much less patronage than such a valuable course of instruction should command.

ADVANCE IN RADIATION.

On Monday the steam and hot water heating trade received from the different manufacturers a new discount sheet on radiation. For some time back concessions in prices have been made on some styles of radiators by different manufacturers, and the natural tendency has been for the orders to concentrate on these lines. Recently an increase has been noted in the inquiries for prices on all kinds of heating goods, including boilers and radiators. This increase is evidence of a healthy condition of trade and a promising outlook. Those who have kept in touch with the movements in the trade have been of the opinion that it was only a matter of time when an advance in radiation would take place, and that it would occur as soon as any increase in the demand was shown. The present change in price amounts to an advance of 5 per cent. on some radiation and 2½ per cent. on other lines of radiation, and it has the final effect of putting all styles of radiation at the same price. Previous to the active demand mentioned there was some latitude in the selling prices, the complaint being made in certain quarters that some buyers were quoted prices out of proportion to their capaeity for consumption. It is expected that the new prices will be strictly adhered to.

The Hendler Portable Acetylene Generator.

The advantages derived from such a strong illuminant as acetylene gas, when the plant for its production is portable and available for use in wagons, railroad cars or in building operations, or for outdoor work of any character that must be done at night, will naturally create a demand for such an apparatus. The Hendler portable automatic acetylene gas generator, which has been designed for this purpose, is manufactured by the International Light & Heat Company of Kansas City,



The Hendler Portable Acetylene Generator.—Fig. 1.—General View.

Mo. A general view of the generator is presented in Fig. 1, and its construction and operation may be followed by a study of the sectional view presented in Fig. 2. It is claimed that the generator is entirely automatic in action, is without a gasometer, cock or valve, and stores no gas. The gas is produced as needed whether one or several burners are in operation.

The apparatus consists of a generating chamber, A, in which is the carbide cup F, the bottom of which is raised a short distance above the bottom of the chamber by means of legs. The chamber A is surrounded by a reservoir, B. The pipe C connects the generating chamber with the water reservoir. The carbide cup F has a number of small tubes passing through it. The outlet for the gas generated is by means of the pipe H, and a safety or blow off connection is made at K. The water reservoir is filled at the opening L, which is closed by a screw cap, making the reservoir perfectly tight. In operation the use of lump carbide is recommended as being more economical. When the carbide chamber has been charged and the water reservoir is filled it is only nec-

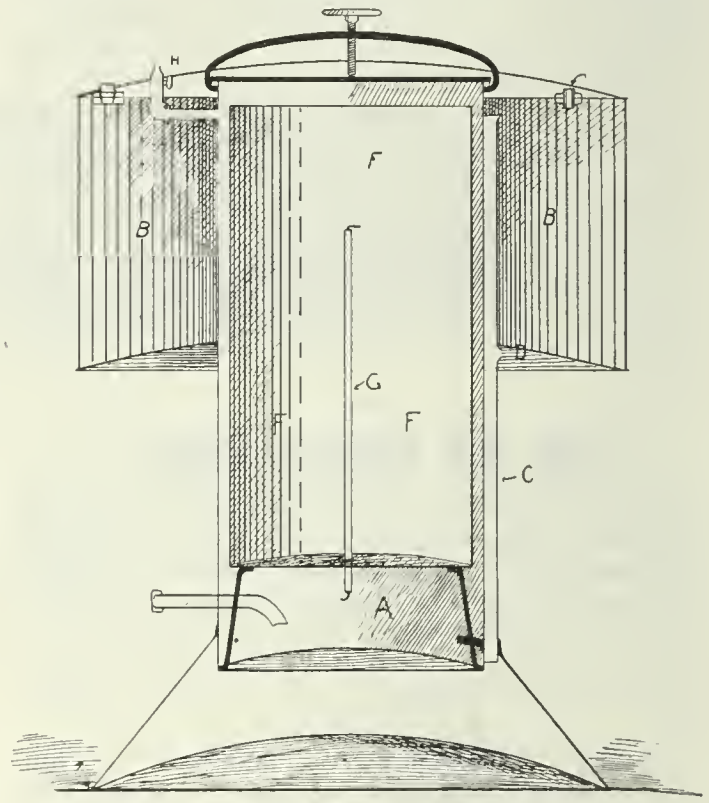


Fig. 2.—Sectional View of Generator.

essary to open the burner and allow the air in the apparatus to pass off, and when the apparatus is clear of air the gas presses to the burner and can be lighted. When the burner is turned out the gas pressure will force the water back from contact with the carbide and the generation will be stopped. As soon as the burner is opened and gas consumed the water will flow in again and cause more gas to be generated. If any excessive pressure occurs the gas will be forced up through the pipe C and escape through the blow off opening at K.

The operation being entirely automatic and being provided with a safety outlet, the apparatus is self regulating and well adapted for the variety of work for which it is recommended. It is claimed that the operation is not the least affected by jolting or jarring, or by the position in which it is set. These qualities adapt it for use in lighting railroad trains or locomotive headlights, also for wagons, carriages, outdoor building operations and any similar work. The generators are made in several sizes, adapted for supplying from 1 to 50 lights. The generators are said to be of first-class workmanship and made of the best materials, to be well adapted for general service and light enough to be readily transported. The machine capable of supplying 25 lights stands 24 inches in hight, is 24 inches in diameter and weighs but 34 pounds. It is pointed out that when the machine needs recharging it is a simple matter to unclamp the cap of the charging chamber, remove the feed cup F and thoroughly cleanse the interior.

The Metal Worker acknowledges the receipt of an invitation to attend the annual outing of the Brooklyn branch of the New York Association of Master Plumbers, to be held at Donnelly's Grove, College Point, on Wednesday, July 24. The steamer will leave the Bridge Dock, Fulton street, at 9 a.m. sharp. The invitation says that the outings in the past are numbered as bright days in the lives of the Brooklyn master plumbers. Those who desire tickets should correspond with Ed. Macdonald, 98 Cedar street, Brooklyn, N. Y.

SELLING ACETYLENE GENERATORS.

The popularity of the acetylene gas light not only has been established, but is extending. This is true to such an extent that it is now only necessary for men qualified to install such lighting plants to take up their sale in order to build up a profitable business. The period of introduction is well advanced and the burden of the labor incidental thereto has been borne largely by the mauufacturers, who protect the trade by allowing them a liberal margin of profit. In return for this the manufacturers have the right to expect the trade generally to join them in extending the sale of these goods, particnlarly as no great expense attends the making of an active canvass in this line. Here is an apparatus which has already made its way, and when those of the best quality are installed they not ouly bring a profit but have been almost universally satisfactory and the means of effecting other sales. All that is required to participate in these profits is for the plumber, tinsmith or other mechanic to do a little reading and studying in order to become thoroughly informed regarding the characteristics of carbide, and the best methods of generating acetylene gas from it. This will aid him in studying the different apparatus on the market, in order to select one to make a run with in his territory.

Inasmuch as there is a liberal profit in this trade manufacturers rightly hold that they are not asking too much of the trade which is naturally best qnalified to take hold of their goods in expecting them to make the necessary effort to qualify themselves to extend the sale of acetylene apparatus. The light, while powerful in illuminating qualities, is an agreeable one, and the apparatus which produces it is adapted for sale at all seasons. Those who are located in suburban districts are naturally customers for such a lighting apparatus, and there are instauces where tradesmen who have devoted their time to becoming experts in acetylene lighting have secured trade from quite a distance from their own town, and from lighting residences have installed illnminatiug plants in large hotels, and have eveu established systems of lighting for small towns.

The field is a wide one and it ouly needs to be handled with intelligence to build up an established trade on profitable lines. With the many modern conveniences adapted to the use of the well to do public, there is no reason why the progressive, active plumber, tinsmith or other tradesman should have any dull season. Acetylene lighting is a busiuess that can be pushed at all seasons, and one of its great advantages is that it is simple to understand, although a wide knowledge of its characteristics is one of the best aids to those who engage in the sale of the apparatus.

THE USE OF HEATING COILS.

Progressive men in various parts of the country have at different times informed *The Metal Worker* that they have built up a considerable business in the dull season, which nas grown into an established business for all seasons, by bringing to the attention of farmers and towns people the benefit that can be derived from a heating coil iu their stoves and heating apparatus. Where the smaller sizes of pipe are large enough for the work in hand, a good mechanic can make his own pipe coils, but where the larger sizes are used many have found it of advautage to send the exact dimensions of the pipe coil which they desire, or the chamber in which it is to fit, to the National Pipe Bending Company of New Haven, Conn. This company are prepared to furnish any kind of a coil, from the small coils that might be used in a cook stove for heating the kitchen boiler and the larger coil to be used in a hot air furnace for heating several radiators, up to the immense coils used in the vats of mannfacturing establishments. Recently a Canadian correspondent stated that he had done a considerable business in furnishing coils for cooking stoves and connecting them with tin, sheet iron and copper hot water tanks, raised on platforms conveniem to the stove. These furnished a large quantity of hot water available for domestic purposes and also for mixing feed and tempering the drinking water for stock. It is easy for the ingenious man to study out how he can serve well to do customers by explaining to them the convenience of pipe coils for heating water. By so doing he will frequently secure orders to fit np some kind of a pipe coil to meet special needs.

TESTS OF RADIATORS WITH SUPERHEATED STEAM.*

BY R. C. CARPENTER, ITHACA. N. Y.

In making a series of radiator tests during the spring of 1901 superheated steam was inadvertently used in several cases. To my surprise the capacity for heat transmission of the radiator was thereby reduced. I did not have sufficient time to investigate the pheuomena exhaustively, but the data which was taken seemed to be of such general interest that I have concluded to present the results of the test to the society for discussion.

The radiators tested were named respectively No. 1 and No. 2. No. 1 was 18 inches in hight and contained ten sections, each 11 inches wide, constructed so as to have very little air space between the sections, the least distance between sections being ¼ inch. No. 2 was 38 iuches in hight and contained ten sectious, each 7 inches wide, and spaced so as to give abundant room for air currents aronnd the sections. The least distance between sections was ¾ iuch. The radiators were both tested with steam which was taken through a single inlet, No. 1 being of the hot water type, with top connection as well as bottom conuection of the sections, whereas No. 2 was of the steam heating type, with no top connection of the sections. The dimensions are given in the accompanying table and the rough sketch shows general form of each radiator:

Dimensions of Radiators.

	No. 1.	No. 2.
Total hight, inches	18	38
Hight of leg, inches	2	3
Least distance between sections, inch	¼	¾
Total length, inches	24½	24
Thickness of radiator, inches	11	7
Type	Hot water.	Steam.
Number of inlets	1	1
Measured surface, square feet	38.6	49.1

The radiators were arranged for testing on a platform having an elevation about 2 feet above the floor, and sufficient for inserting vessels underneath the radiators to obtain the water of condensation. Steam for the test was obtained from a high pressure main which passed through a steam separator to remove any free water, thence through a reducing valve set to maintaiu the desired pressure, thence to a receiver located between the two radiators. From the receiver a pipe was led to each inlet of the radiator. The water of condensation was taken off at the inlet end and permitted to drip into a receiver provided with a water glass arranged in such a manner that the water in the receiver could be held at a uniform level, which was about 1 foot below the bottom of the radiator. The water of condensation was cooled before being weighed. Temperatures were taken of the outside air and at several places in the air of the compartmeut in which the test was conducted. Temperatures were also taken of condensed steam and of the surface of the radiator on two sides. In taking the temperature of the surface of the radiator the bulb of a thermometer was fastened against the metallic wall of the radiator and protected from external radiation by hair felt. This test does not give the temperature of the radiator because of the cooling of the thermometer bulb, but it gave useful information as to the distribution of heat in the radiator. The two radiators tested were kept at a distance of about 6 feet, and the effect of radiation from one to the other was counteracted by a partition midway between the two. The radiators were shielded from any currents of air and the room was kept, as nearly as the outside conditions would permit, at a temperature of 70 degrees.

The writer has observed in previous tests of radiators that when testing a high and a low radiator the low radiator would always show a greater heat transmission for the same surface exposed. In these tests we have an apparent exception to this rule, as it will be noted that the higher radiator gave a higher rate of heat transmission per square foot of surface than the lower. An examination, however, of the dimensions of the radiators will show that the air space surrounding the sections in the low radiator was very much less than in the high. While I have not an accurate measurement of air space, it is probable that the air space per unit of surface in the low was about four times that in the high radiator.

*Paper read at fourth semiannual meeting of the American Society of Heating and Ventilating Engineers, at Chicago, July 13, 1901.

The test is interesting as showiug that by properly proportioning the air spaces betweeu the sections the heat transmitted per unit of surface in high or low radiators may be equalized. This also shows that the air spaee doubtless plays an important office in earrying away the heat from the radiators.

Expressing the final results in terms of the number of heat units transmitted per hour per square foot per degree, we have the following results, as applicable to the case where there was either no superheating of the steam or only a very slight amount:

Steam pressure. Pounds.	Superheat. Degrees.	B. T. U. per square foot per hour per degree. Radiator No. 1.	Radiator No. 2.
2	0.0	1.48	1.83
2	0.13	1.50	1.92
10	0.30	1.50	1.91

These results indieate a substantial uniformity in heat transmission per degree difference of temperature from 2 to 10 pounds.

The process of redueing the pressure wire drawed the steam, thus liberating a eousiderable amount of heat energy, whieh expended itself in superheating the steam. The effeet of liberating this heat energy without work was to superheat the steam, and this, eontrary to our expeetations, was to reduee the amount of heat transmitted. Thus with radiator No. 1, with no superheat, the heat transmission per hour per square foot of surfaee per degree, which we will term hereafter the heat transmission, was 1.48 B. T. U; with about 36 degrees superheat this was reduced to 1.16 B. T. U. With radiator No. 2 there was a corresponding reduetion from 1.83 to 1.41 B. T. U.

With 5 pounds of steam pressure, and when steam was superheated 13.1 degrees, the heat transmissiou was 1.41 B. T. U. for the low radiator and 1.74 B. T. U. for the high. When the degree of superheat was inereased to 24.1 degrees the heat transmission of the low radiator fell to 1.23 B. T. U. and that of the high to 1.45 B. T. U.

With 10 pounds of steam pressure the heat transmission for 3-10 degree of superheat was for the low radiator 1.5 B. T. U. and for the high radiator 1.9 B. T. U. When the steam was superheated to 26.7 degrees the heat transmission fell to 1.24 for the low radiator and 1.62 for the high radiator. Several cheek runs were made, the results of which show a variation of less than 2 per cent. This run is given uncorreeted, although the results are probably 2 or 3 per eent. high because of some condition which could not be determined. Possibly the radiator may have been iu a slight draft of air, although measures were taken to prevent sueh an oeeurrenee if possible.

The conelusions from the tests made with superheated steam would be that it is a poor medium to employ for heating purposes, the reason doubtless being due to the fact that superheated steam is much more nearly like a perfeet gas in its nature than a saturated vapor, and when in this eondition parts with its heat mueh less readily than saturated or wet steam. It is not probable that the amount of superheat was suffieient in any of the cases described to fill the entire radiator with steam of this charaeter, and this, I take it, aceounts for the continued falling off in heat trausmission as the degree of superheat increased.

The results whieh are obtaiued relating to the effeet of superheated steam were quite aecidental and unexpected, and are, I believe, so peeuliar in effeet as to warrant general discussion.

The following table gives the general results of the radiator tests, which is followed with eomplete tables of data and results:

GENERAL RESULTS OF RADIATOR TESTS.

Radiator No. 1.

Hight, 18 inches; measured surface, 38.6 square feet; least distauce betweeu sections, ¼ inch.

No. Test.	Pressure. Pounds.	Tem. perature air. Degrees.	Tem-perature. steam. Degrees.	Degree superheat.	B. T. U. per hour per square foot per degree.	Pounds of steam condensed per hour.
6	2	71.3	217.0	0.0	1.48	8.33
5	2	77.1	217.1	0.13	1.50	8.13
4	2	74.0	252.8	35.83	1.16	7.88
7	5	70.2	239.0	13.10	1.41	9.18
3	5	75.5	252.7	24.10	1.23	8.38
2	10	72.5	264.7	26.70	1.24	9.18
8	10	75.8	238.4	0.30	1.50	9.25
1	30	74.1	274.5	1.10	1.83	14.07

Radiator No. 2.

Hight, 38 inches; measured surface, 49.1 square feet; least distance between sections, ¾ inch.

6	2	73.5	217.0	0.0	1.83	13.00
5	2	80.3	217.1	0.13	1.92	12.75
4	2	77.0	252.8	35.83	1.41	12.25
7	5	73.5	239.0	13.10	1.74	14.16
3	5	76.7	252.7	24.10	1.45	12.63
2	10	74.2	264.7	26.70	1.62	15.00
8	10	77.3	238.4	0.30	1.91	15.16
1	30	76.8	274.5	1.10	1.97	18.94

Results of Test.—Radiator No. 1.—18 *Inches High.*

Number of test—	1.	2.	3	4.	5.	6.	7.	8.
Duration of test, hours	1.33	1.5	2.0	2.0	2.0	1.5	1.5	1.5
Barometer, pounds	14.3	14.1	14.25	14.2	14.2	14.4	14.25	14.15
Average temperature of compartmeut, degrees	74.1	72.5	75.5	74.0	77.1	71.3	70.2	75.8
Average temperature of condensed steaiu, degrees	193.1	194.3	187.0	184.8	184.1	183.4	192.0	195.1
Average steam pressure above atmosphere, pounds	30.0	10.0	5.0	2.0	2.0	2.0	5.0	10.0
Absolute pressure of steam, pounds	44.3	24.1	19.25	16.2	16.2	16.4	19.25	24.15
Temperature of steam entering, degrees	274.5	264.7	252.7	252.8	217.1	217.0	239.0	238.4
Superheat, degrees F	1.1	26.7	24.1	35.83	0.13	100.0	13.1	0.3
Weight of steam condensed, total, pounds	18.75	13.75	16.75	15.75	16.25	12.5	13.75	14.25
Difference of temperature between steam and surrounding air, degrees	200.4	192.2	177.2	178.8	140.0	145.7	168.8	162.2
Total heat supplied per pound of steam, B. T. U	1,165.85	1,167.33	1,162.41	1,165.31	1,147.18	1,148.3	1,157.14	1,154.72
Total heat per pouud condensed steam, B. T. U	161.1	162.3	155.0	152.8	152.1	151.4	160.0	163.1
Heat radiated per pound of condensed steam, B. T. U	1,004.75	1,005.03	1,007.41	1,012.51	995.08	996.9	997.14	991.62
Total heat radiated, B. T. U	18,830	13,810	16,850	15,950	16,190	12,450	13,720	14,130
Total heat radiated per hour, B. T. U	14,120	9,220	8,425	7,975	8,095	8,300	9,140	9,413
Heat radiated per hour per degree difference of temperature between steam and surrouudiug air, B. T. U	70.5	48.0	47.8	44.6	57.8	57.0	54.25	58.0
Same as above per square foot actual surface, B. T. U	366.0	239.0	219.5	206.5	209.5	215.0	237.0	244.0
Same as above per square foot actual surface per degree, B. T. U	1.83	1.24	1.23	1.16	1.5	1.48	1.405	1.502

Results of Test.—Radiator No. 2.—38 *Inches High.*

Number of test—	1.	2.	3.	4.	5.	6.	7.	8.
Duration of test, hours	1.33	1.5	2.0	2.0	2.0	1.5	1.5	1.5
Barometer, pounds	14.3	14.1	14.25	14.2	14.2	...	14.25	14.15
Average temperature of compartment, degrees	76.8	74.2	76.7	77.0	80.3	73.5	73.5	77.3
Average temperature of coudensed steam, degrees	194.9	190.0	192.4	187.2	186.9	187.0	194.0	193.8
Average steam pressure above atmosphere, pounds	30.0	10.0	5.0	2.0	2.0	2.0	5.0	10.0
Absolute pressure of steam, pouuds	44.3	24.1	19.25	16.2	16.2	16.4	19.25	24.15
Temperature of steam entering, degrees	274.5	264.7	252.7	252.8	217.1	217.0	239.0	238.4
Superheat, degrees F	1.1	26.7	24.1	35.83	0.13	100.0	13.1	0.3
Weight of steam condensed, total, pounds	25.25	22.50	25.25	24.50	25.50	19.5	21.25	22.75
Difference of temperature between steam and surrounding air, degrees	197.7	190.5	176.0	175.8	136.8	143.5	165.5	161.1
Total heat supplied per pound of steam, B. T. U	1,165.85	1,167.33	1,162.41	1,165.31	1,147.18	1,148.3	1,157.14	1,154.72
Total heat coudeused steam, B. T. U	162.9	158.0	160.4	155.2	154.9	155.0	162.0	161.8
Heat radiated per pound of condeused steam, B. T. U	1,002.95	1,009.33	1,002.01	1,010.11	992.28	993.3	995.14	992.92
Total heat radiated, B. T. U	25,410	22,700	25,340	24,380	25,800	19,350	21,150	22,600
Total heat radiated per hour, B. T. U	19,100	15,130	12,670	12,190	12,900	12,900	14,100	15,050
Heat radiated per hour per degree difference of temperature between steam and surrouuding air, B. T. U	96.6	79.5	71.9	69.5	94.5	90.0	85.3	93.5
Same as above per square foot actual surface, B. T. U	390.0	309.0	258.0	248.0	263.0	263.0	288.0	307.0
Same as above per square foot actual surface per degree, B. T. U	1.97	1.62	1.45	1.41	1.92	1.83	1.74	1.905

Connecticut Plumbers' Committees.

President Manwaring of the Connecticut Association of Master Plumbers has appointed the following committees for 1901-2:

Sanitary Committee: S. E. Dibble, New Haven; T. W. Corbett, New Haven; T. D. Barlow, Waterbury; J. F. Brady, Bridgeport; George Mahl, Hartford.

Legislative Committee: James Donovan, Middletown; J. R. Fay, Southington; T. H. Langdon, Hartford; J. M. Page, Naugatuck; H. Marsden, Derby.

Essay Committee: F. H. Hitchcock, Woodbury; A. H. McMahon, New Milford; James Ahern, Hartford; John Troland, Norwich; George Scofield, Bridgeport.

Apprenticeship Committee: L. H. Mills, Bridgeport; J. S. Craig, Hartford; T. E. Burnes, New Britain; A. J. Clerkin, New Haven; O. D. Sykes, Seymour.

New York City Notes.

The plumbing department of the Board of Education under Chief Inspector Delvar is very busy now on vacation repairs. Work is to be done on nearly every school in the city.

* * *

Trade is picking up and there are but few journeymen out of a job. Among the new jobs under way are the following:

Gus Staats, at northeast corner 130th street and Lenox avenue, four large apartment houses.

L. D. Hosford, at 320 West Twenty-fifth street, an elevator apartment 40 x 98, and the Y. M. C. A. Building at 153 East Eighty-sixth street.

Rossman & Bracken have an apartment at 213 West Sixty-second street.

Reynolds & McMahon have a row of flats on 115th street, west of Fifth avenue, and an apartment at 141st street and Seventh avenue.

L. H. Wenzel has a large private house, 40 x 85, on Eighty-seventh street just east of Fifth avenue.

Paul Enell has a block of flats at 125th and Manhattan streets and a row on Amsterdam avenue between 141st and 142d streets.

Milton Schnaier & Co. have, in addition to their other work, an apartment at 120 East Thirty-first street.

J. P. Knight is plumbing a large bachelor apartment on West Forty-fourth street, which will be used in connection with the clubs in that vicinity.

* * *

Work on several new schools has been given out lately and the plumbing is being done by the following:

One Hundred and Sixteenth and 117th streets, between Lenox and Fifth avenues, J. J. McGrath.

Eighth and Ninth streets, near Avenue C, D. J. Deady.

John Spence has the addition to the schol at 167th and Baretto streets, in the Bronx.

James Fay has schools at Forty and Forty-first streets and Fourth avenue, in Brooklyn, and 101st and 102d streets and Amsterdam avenue, in Manhattan.

* * *

In proportion to area there is more building being done in the district east of Broadway, south of Fourteenth street and above Chatham square than in any other portion of the city, and with all the new work plumbers in that section are very busy.

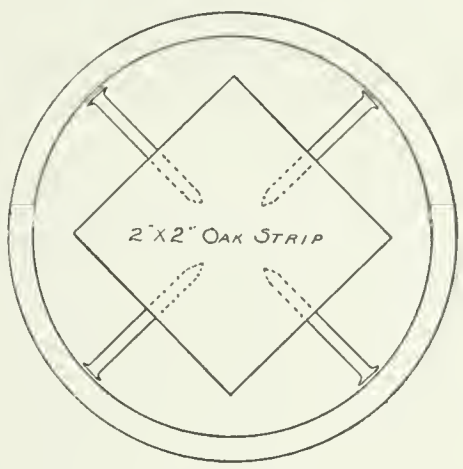
A NEW building has replaced the machine shop of the American Radiator Company, Detroit, Mich., which was destroyed by fire some time since. This new building or addition to the plant has been adapted for a much larger scale of usefulness, being more conveniently arranged than the old one and better equipped in every particular. This will enable the company to furnish their popular line of Radiators with their usual promptness. They are to be congratulated on the possession so early in the season of the increased facilities thus secured, as they will be enabled to avoid many delays that could not have been otherwise than disappointing to the trade.

VOLUME OF WATER IN HOT WATER HEATING APPARATUS.*

BY W. M. MACKAY, NEW YORK.

The volume of water required per square foot of radiating and heating surface in the radiators, mains and heater in a hot water heating apparatus, for best results in heating and greatest economy of fuel in operation, is a question which has received some attention in the past, but judging from the differences of opinion, as expressed in their various constructions by manufacturers of heaters which have been used for heating by hot water during the past 25 years, and which are being offered and used at the present time for that purpose, we are still far from a standard, particularly in the volume of water required in the heater per square foot of heating surface exposed to the fire or heated gases. In the manufacture of radiators, particularly when they have been constructed with a view to their being used for hot water heating, the standard aimed at, and finally accepted, by the leading manufacturers of radiators in this country has been 1 pint of water to the square foot of surface—being approximately the volume of water contained in 1 square foot of surface of 1 inch ordinary thickness wrought iron or steel pipe.

Some radiators have been constructed which contained less than this volume of water, and some which contained considerably more, but in either case these



Volume of Water in Hot Water Heating Apparatus.

radiators have gradually gone out of use, while new designs in hot water radiators which have been brought out during the past six years have largely conformed with this standard, which seems in practice to be the best suited for this purpose for all classes of buildings, except, perhaps, all glass constructions. I have found it to be an advantage, on account of the greater and quicker cooling effect in such constructions and the variable temperatures at which the water in the system is sometimes maintained on account of irregular firing, lack of fire box capacity or lack of capacity in the heater, and on account of friction due to the long lines of piping usually employed in placing the required radiating surface in this class of building, to use a surface that contained from 50 to 100 per cent. more water, although were a uniform temperature maintained on the water in the heater and the same arrangement of radiating surface utilized that is at present used for the heating of other buildings with this system, with short circulations and an ample arrangement of mains, it would not be necessary to increase the body of water in the radiating surface in such constructions above 1 pint to the square foot of surface.

At our last annual meeting, during a topical discussion when this question was under consideration, I mentioned an experiment, or test, made some years ago in two greenhouses of uniform construction, size 16 x 100; each house contained approximately 2000 square feet of glass and had about 650 square feet of surface or running feet of 4-inch greenhouse pipe; each house was heated by a separate heater located in the same pit, with separate brick flues 8 x 12 inches extending 20 feet above the ground. To these flues each heater was separately connected by 10-inch wrought iron pipe; each heater had about 4 square feet of grate area and about 90 square feet of fire and flue surface (about half fire and half flue surface). The radiating surface was arranged in the usual way for such constructions, in 4-inch greenhouse pipe on each side of the house below the benches, with one flow and two return pipes on each side, an open expansion tank at the extreme end of each line, and each

* Paper read at the fourth semiannual meeting of the American Society of Heating and Ventilating Engineers, Chicago, July 13, 1901.

side connected separately to the heater with a 4-inch flow and return connection. In one house the 4-inch pipe was left regular and had an internal area of about 10 square inches; in the other house 2 x 2 inch oak strips were inserted in the center of the pipes, reducing the waterway about 40 per cent., while retaining the same external surface. In a six-hour test, maintaining a 60-degree temperature in each house with an outside temperature of from 25 to 30 degrees, an average temperature of 160 degrees was maintained on the flow mains and 130 degrees on the return mains at each heater. The consumption of fuel was 130 pounds of anthracite coal, stove size, for the house with full waterways in the radiating surface, and 110 pounds of the same coal for the house with reduced waterways, while the temperature on the flow main on the heater with reduced waterways was frequently 5 degrees higher than on the other heater, and the dampers on this heater had to be partially closed to prevent a higher temperature. Later this house was lengthened 25 feet, or 25 per cent., and piped in the same way, and the temperature maintained with the same average consumption of fuel as that used in the other heater on 25 per cent. less surface and glass area.

Since that time I have used largely 1¼-inch pipe, with a little over 1 pint of water to the square foot of surface, in small conservatories; 1½-inch pipe, with about 1½ pints of water to the square foot of surface, in medium sized conservatories, and 2-inch pipe, with about 1 quart of water to the square foot of surface, in large conservatories and greenhouses, in preference to 4-inch greenhouse pipe, with about ½ gallon of water to the square foot of surface, and have found that I obtained better and quicker results, a greater possible variation of temperature and greater economy, from the use of 2-inch pipe with manifolds than from any other size of pipe, either larger or smaller.

In arranging the mains of a hot water heating apparatus the area of the main has to be determined from the number of square feet of radiating surface to be supplied, and the nature of the surface, whether direct, direct-indirect or indirect radiation, and from the length of the main, also whether the main is to be used as radiating surface or covered; so that no standard as to volume of water per square foot of surface supplied could be adopted in regard to the mains in a hot water heating apparatus without being subject to considerable variation. At the same time I have found cases in hot water heating where the areas of the mains were from 25 to 50 per cent. larger than was necessary, and they could have been reduced with beneficial results, being made large to insure a uniform temperature in the main, which could have been obtained in a smaller main with a different arrangement of taking off branch connections.

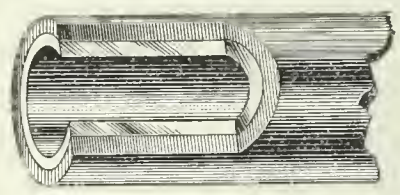
The greatest difference of opinion as to the volume of water required per square foot of its surface in hot water heating seems to exist in the heater or source of supply.

Commencing with boilers of the Cornish type, which are used in some sections for hot water heating, they contain about 3 gallons of water per square foot of boiler surface; then the ordinary horizontal and vertical tubular boilers arranged for hot water have about 1½ gallons of water per square foot of surface; a number of cast iron one piece and sectional heaters have about 1 gallon of water per square foot of surface, some have 3 quarts and others have ½ gallon; then some heaters of this type and water tube heaters contain from 3 pints to 1 pint of water per square foot of surface, and in some heaters constructed of 1-inch pipe, while the volume of water to the foot of surface is not materially reduced, the friction is increased by inserting a sheet metal circulating division, reducing the pipe to half its area. Now, if we do not consider the Cornish boilers, which are more largely used in other countries, and commence with the horizontal tubular boiler, which is largely used in this country, we have a variation in hot water heaters of all the way from 1½ gallons to 1 pint of water per square foot of surface, and while all of these different constructions, with their varying amounts of water, will accomplish certain results with more or less efficiency and economy, certainly some will produce better results than others, and on that account would be considered a proper standard, and while the arrangement and location of the surface to the fire and heated gases would make some difference as to the volume of water which should be back of it, I have obtained the best results from an average of ½ gallon of water per square foot of heating surface in a hot water heater, with an average of from 20 to 25 square feet of heater surface to each square foot of grate area, the surface being arranged about 50 to 60 per cent. of fire surface and about 40 to 50 per cent. of flue surface.

THE town of Camden, Maine, wishes to receive plumbing and heating estimates for the local school house.

Tin Lined and Lead Lined Iron Pipe.

Lamb & Ritchie, Cambridgeport, Mass., are offering tin lined iron pipe, as shown in the accompanying illustration. The L. & R. pipe, as it is called by the manufacturers, is made by pouring melted tin into wrought iron pipe. While melted the tin, it is explained, is inseparably united and formed into a substantial inner pipe, resulting in one solid pipe of two metals which cannot be torn apart. Lead lined pipe is made in the same way. The lining, it is remarked, cannot be separated from the iron even when bent or coiled. The composite pipe is designed to be successfully used where tin, lead, brass or iron pipes alone are too expensive or unsatisfactory. It is pointed out that the tin lined pipe insures pure water and that it combines with this merit all the strength of wrought iron pipe, and actually increases its strength. It is shown that it is essentially different from iron pipe dipped in tin, or iron pipe lined with a separate tin pipe which will become detached. Fittings are lined with tin to match the pipe. It is stated



Tin Lined Iron Pipe.

that hot water will not injure the pipe, that rats will not gnaw it and that thieves will not cut it out. For ornamental finish the pipe may be nickel plated.

Heating and Plumbing Notes.

A 61-PAGE CATALOGUE, illustrated with half-tone engravings showing a fine line of Gas Fixtures, and known as Catalogue No. 9, is being distributed among the plumbing and gas fitting trade by Charles Polacheck & Brother of Milwaukee, Wis. The firm quote prices on the goods which are said to be very attractive.

THE Pittsburgh *Dispatch* is responsible for the report that a novelty in the way of Glass Bathtubs is to be put on the market by a company in which Uniontown, Pa., capitalists are interested. It is stated that a $50,000 factory for manufacturing these tubs is to be erected at Port Marion, Pa. Danger of breakages from changes of temperature are said to be avoided by running the pipes so that the water heats the Tub before it enters.

THE SMOKE PREVENTION COMPANY OF AMERICA, 66 Broadway, New York, are distributing a very suggestive card, inviting close attention to the boiler room, to see if the use of their Automatic Smoke Preventor and Fuel Economizer would not effect some economy. A feature of the card is a picture showing the back of a large chair in front of an open fire place, with the heads of the young man and his sweetheart just appearing above the chair.

THE WILLIAM GROSCUP COMPANY, Baltimore, Md., report some large contracts in hand, among which are a low steam pressure system for the C. & P. Exchange Building, a new Boiler for the department store of H. Wessel & Son, a hot water system for the *café* and residence of George Reuss, and steam systems for the residence of James R. Brewer and the office of John Waters, all in Baltimore. The firm are installing a hot water heating plant in the residence and pharmacy of H. F. Vogal, and doing the hot water heating and plumbing in the office of Samuel Rice. They have also a contract for plumbing seven houses for James F. Carter, and one for the sheet metal work, plumbing, gas fitting and range work in 21 houses for T. Milton Jones.

E. RUTZLER, 171 Centre street, New York City, has the contract for equipping the State Hospital at Central Islip, N. Y., with a heating plant. He is using 24 Toby Water Heaters in the different buildings. These Water Heaters are made by the J. L. Mott Iron Works of New York City.

The master plumbers of Scranton and Wilkes-Barre, Pa., are enjoying a joint outing at Ranson, Pa., to-day.

The Board of Education of Elmira, N. Y., will receive bids until July 27 for a fan system of heating and ventilation and for plumbing the addition to the School Building No. 4 in that city.

The Abner Acetylene Gas Company, 34-36 La Salle street, Chicago, Ill., are sending to the trade an eight-page circular devoted to their Abner Acetylene Gas Generators for lighting residences, stores and all kinds of buildings, including large hotels. The Generators vary in capacity for furnishing from 10 to 2000 lights.

The Paragon Brass Works, 87 Centre street, New York City, are sending to the trade a six-page folder devoted to their Overhead Vehicle Washers and Water Cut Offs for use in hose. This will be of interest to plumbers who desire to fit up stables for customers or liverymen where appliances are desired for conveniently washing carriages.

Superintendent of Buildings Gray of Cambridge, Mass., has awarded a contract for $15,200 to Lynch & Woodward of that city for furnishing a new heating and ventilating system, and also new Boilers, in the Rindge Manual Training School.

The Central Foundry Company of New York, a New Jersey corporation, will hold their annual meeting in Jersey City on July 25.

The Bridgeport Artesian Well Company, Bridgeport, Conn., have started work on a well for Charles A. Armstrong. They have also resumed work on the well which they are sinking for the Locomobile Company, which is now down to a depth of 300 feet.

Bids will be received until August 9 by A. F. Bickham, constructing quartermaster, 419 North Washington street, Alexandria, Va., for installing the plumbing and steam heating apparatus in two sets of officers' quarters at Fort Washington, Md.

Cramer & Hollister, Cortland, N. Y., bid $1757 and secured the contract for plumbing and heating the Pomeroy Street School Building in that town.

George C. Crawford & Co. have opened a new plumbing shop and showroom at Northeast Harbor, Maine.

J. C. Polson, Holyoke, Mass., has the plumbing contract for a 35-tenement block for L. A. Lafrance, in that city. He also has a contract for plumbing a 12-tenement, a 15-tenement and a 48-tenement building for the same owner.

The contract for plumbing the new Mutual Life Building at Little Rock, Ark., has been awarded to Pettit & Sanders of that city, and also the contract for a steam heating system in the Central Baptist College at Conway.

The High School of East Hartford, Conn., of which H. B. Williams is chairman, will receive bids for installing a new plumbing system in the High School Building.

Simpson Clark, Springfield, Mass., has a contract for placing two Hot Air Furnaces in the Congregational Church in West Springfield. He is also installing a Magee Steam Boiler in the residence of Dr. Atwater and placing a steam heating apparatus in the State Street Baptist Church.

David W. Yarborough, Atlanta, Ga., has the plumbing contract for the Piedmont Hotel in that city. Among the items are 150 Porcelain Bathtubs.

Libby & Blinn, Hartford, Conn., have been awarded an important contract for heating and ventilating the Eliza Trumbull Robinson Memorial Ward, which is being erected in connection with the Hartford Hospital. The apparatus will consist of both direct and indirect steam radiation. The ventilation will be arranged so as to be operated mechanically by a fan or by gravity, as may be desired.

J. B. Mooney & Co., Grand Forks, N. D., bid $3385 and secured the contract for the steam heating and ventilating plant for the East Grand Forks High School. The firm also have contracts for a steam heating plant for the residence of J. Gowran and for a hot water heating plant for the residence of M. McGowan. They are installing the plumbing in the residence of C. Vallely, and are constructing sewer systems for James K. Swan and J. J. Dunlap.

New Departure Bell Company, Bristol, Conn., for whom John H. Graham & Co., 113 Chambers street, New York, are sole representatives, have just put on the market a full line of Brass Compression Bibs. The particular attention of the trade is asked to the fine finish and high grade of the product. They are booking orders for Racking Cocks, which they expect to be able to ship by August 1, and will have lines of Liquor Cocks and similar goods, it is said, by September 1 next.

The Western Tube Company, Kewanee, Ill., have just issued a handsome illustrated and descriptive catalogue of their goods containing 204 pages, well printed on fine paper. In it are shown goods manufactured by them, among which are full lines of Wrought Iron and Steel Pipe for steam, gas, water and air, Cast Iron and Malleable Iron Fittings, Brass Fittings, Brass and Iron Valves and Cocks and Radiators and Coils for steam and hot water, also square and rectangular Tubing for agricultural implements and agricultural purposes.

The plumbing firm of William B. Bull & Son of Lenox, Mass., have begun what is said to be the biggest contract of plumbing that was ever let in the State, outside of Boston. The contracts call for the plumbing of the Hotel Aspinwall, the setting up of 106 bathtubs and 138 closets.

Bids will be received until July 27 by the Board of Education of Rochester, N. Y., for plumbing and gas fitting the East High School in that city.

The action of the Mayor, says the *News* of Savannah, Ga., in sustaining the plumbing inspector in ordering to be opened for examination plumbing work that had not been inspected will be sustained by public sentiment. It is of the utmost importance to the health of householders and the community that the plumbing that is being put in in connection with the new house drainage system shall be perfect. Defective plumbing in a house means danger of sickness and death to those who live in it. To permit poor plumbing, or an opportunity for defective plumbing, after going to the expense of providing an elaborate and costly system of drainage for the especial purpose of improving the health conditions, would be the worst kind of folly. As a matter of protection to those who live in the houses, those who pay for the plumbing and the plumbers themselves, all of the plumbing ought to be inspected.

The Trenton Potteries Company of Trenton, N. J., are erecting three additional kilns in their Ideal plant. These kilns are to be used in the manufacture of Solid Porcelain Bathtubs and Wash Tubs. The demand for this class of Earthenware is so great that at the present time all of the manufacturers are months behind with their orders. There is no such thing as producing any goods in this line in either the A or the B quality and securing prompt shipments upon it. As the demand for this class of ware is increasing, the Trenton Potteries Company decided that the only way they can catch up with their orders is to increase their producing capacity to double its present dimensions. It is expected that the kilns will be ready within six weeks, and at the end of that time the company will be in a position to make much better shipments than they have been able to make for the past four or five months.

Francis Brothers & Jellett, Philadelphia, have a number of large and important contracts on hand, among which are a mechanical plant, including high pressure water tube boilers, for the store of J. R. Jones, to cost $6500; a similar plant for the Philadelphia Warehouse Company, including two return flue tubular boilers, to cost $26,000; a small plant for the Merchants' Warehouse Company, to cost $11,500, and a plant for an addition to the building of H. K. Mulford & Co., to cost $9500. They also have a contract for a low pressure hot water heating system for the residence of David P. Lee, to cost $1200.

New Firms and Changes.

JOHN HANLEY has opened a plumbing shop at the corner of State and Hawley streets, Binghamton, N. Y.

S. G. BOUIS has opened a plumbing establishment at Macon, Ga., with a complete new stock.

THE AUTOMATIC HEATING COMPANY of New York City have been incorporated with a capital of $3,000,000 by George F. Roberts, Lewis L. Bowker and C. F. Walker to manufacture and deal in appliances for generating heat.

THE AMERICAN SAFETY GAS BURNER COMPANY of Providence, R. I., have been incorporated with a capital of $100,000 by George L. Palmer, Stephen E. Patenaude, Thomas F. Toomey, Calvin Deane, Martin V. Brady, John M. Fraser, Andrew H. Moffitt.

THE INTERNATIONAL DUST & CINDER DEFLECTOR COMPANY have filed articles of incorporation in the County Clerk's Office in Brooklyn, N. Y. This company purpose to manufacture patent machinery to provide better air in cars, vehicles and houses and to shield or deflect cinders from doors, windows and ventilators. The capital stock is $175,000. The incorporators are Charles P. Buchanan, Alexander F. Critchon, Charles A. Withers, Jacob A. Cantor and William A. Brockel.

THE GILMORE & DAVIS COMPANY, Tallahassee, Fla., inform us that they are going into the plumbing business and desire to secure catalogues and quotations from manufacturers of goods in their line.

THE NEW CENTURY GAS FIXTURE MFG. & ART METAL COMPANY, with principal office at 1145 South Fourth street, Camden, N. J., have been incorporated by Albert Musser, Frederick Forster and Charles S. Ackley to manufacture Gas and Electric Fixtures. The capital of the concern is $100,000.

THE SANITARY ENAMELING COMPANY, Layton Park, near Milwaukee, Wis., who completed their enameling plant last November, have decided to build a foundry to be 85 x 250 feet. It is to be ready in two months, and the company will manufacture in it Bathtubs, Lavatory Sinks and other Plumbers' Supplies which require enameling. The following officers have been elected: President, R. G. Hayssen; vice-president, H. Hayssen; secretary and treasurer; A. Hayssen.

The Uses of Cement.

While there are many kinds of cement the readers of *The Metal Worker* are most interested in those which can be used in the stove, steam fitting, plumbing and roofing trades. Although it is the object of the pipe fitter, wherever possible, to make a tight joint without the use of any material for making it up, the best mechanic recognizes the value of some lubricating and hardening material on the threads of the pipe. This is not so much for the purpose of making the joint tight as for preserving the surfaces in contact and aiding in separating them in case it is necessary to take the pipes down. In many instances, however, a defective thread, a flaw in the fitting or on the face of a flange joint is prevented from causing annoyance by the use of a suitable cement. George Callahan & Co., 218 Front street, New York, who have made a specialty of this branch of business for a number of years, offer to the trade a variety of cements adapted for different purposes. Their Old Reliable steam joint cement is furnished in the form of a dry powder in packages of different sizes. It is easily mixed in sufficient quantities for use by the addition of pure boiled linseed oil, and they claim that it not only makes tight joints, but joints that are easily separated, leaving the threads clean and rustless. The manufacturers point out an instance where their cement has stood a pressure of 300 pounds on an 18-inch flange for a period of seven years.

Another of their cements is adapted for the use of roofers, and is suited for work on both slate and metal roofs. Frequently a roofer is called to repair a leak when the roof is still wet. In such a case, the company state, their rubber roof cement is a desirable aid, as it will stick to a wet roof, making it tight until more substantial repairs can be made. Moreover, the cement is claimed to be well adapted for standing the weather, keeping the roof tight indefinitely, if not broken by rough treatment. The firm also make a special paint for use on roofs. Another kind of cement they furnish is adapted for filling the joints in stoves, and a special fireproof cement is made for hot air furnace work. They also have a fire clay suitable for lining fire chambers. Circulars pointing out the features of merit of these various specialties can be secured on application.

The Baron De Hirsch Trade School.

Seventy graduates received their diplomas at the closing exercises of the Baron de Hirsch Trade School, 222 East Sixty-fourth street, New York City, on the evening of Thursday, July 12. A feature of the exercises was an interesting display of the work of the classes during the past season. These included examples of house painting, sign painting, plumbing, carpentry, electricity, drawing, and machinists' work. The plumbing exhibit contained, among other things, a complete modern shower and needle bath, with all the necessary piping, a number of models of pipe joints, and creditable samples of different kinds of plumbing work. The plumbing class during the past season was the largest, numbering 21 members. Emil Klamper was awarded a special prize for excellence in this department.

In the course of the exercises, A. S. Solomons, general agent of the Baron de Hirsch Fund, announced that many members of the graduating class of the trade school had already been promised remunerative positions. In commenting upon the usefulness of the institution, Mr. Solomons said that some of its graduates are now being paid salaries of as much as $27 per week, while many of them were receiving from $15 to $18 per week. When it is understood that the membership of this trade school is comprised largely of young Hebrews who have recently landed in this country, and who are in many cases unable to speak the English language, the fact that they are turned out, after a six months' course of trade instruction, sufficiently well equipped to earn a good living at their chosen trade, is certainly to the credit of the institution. Besides hearing from Mr. Solomons the graduates were addressed by the Reverend Harris Maslinsky and Superintendent J. Ernest G. Yalden.

Brazing Brass to Copper.

The best solder for uniting brass to copper, says the *Tradesman*, is soft brass, which will melt much easier than the brass which is to be joined to the copper, otherwise the work would melt at the same time as the solder. The edge of the work must be carefully cleaned, and then the parts brought together in their proper place, and secured with iron wire. The flux to be used is borax, rubbed up in water until it is like a fine cream. The solder, which may be in the form of beads, strips or wire, is next distributed along the joint. The amount of heat and the method of applying it depend entirely upon the size of the work to be done. If the work is small, the blow pipe is by far the most convenient and safest, because if the heat is too great there is danger that the brass part of the work will be melted. The heat is to be applied until the solder melts. As soon as the solder melts or flushes, the work should be struck, so as to jar it just enough to make the solder flow into the joint. To find out whether the solder is soft enough for the work, a piece may be laid upon a bit of brass of the same kind as that of which the work is made, and put into the fire. If the solder melts considerably sooner than the brass it will be safe to use it for the work. If, on the other hand, they both melt about the same time, a softer solder will be needed. Spelter solder may also be used for the purpose.

A scheme is on foot to consolidate a large number of manufacturers of malleable iron castings. It is stated that the consolidation is planned to include practically all the malleable concerns in the West and some in the East.

THE TIN HOUSE WAGE SCALE.

The following statement of the changes in the tin house wage as agreed upon by the American Tin Plate Company and the Tin Plate Workers' International Protective Association, and which went into effect Monday, July 15, was given out by the officials of the association:

Tinners working on "jumbo" stacks have received an advance by the changing in the classification of large and small plates. They also received an advance of prices amounting to 3 per cent. on large plates, 10 per cent. on small plates, and in some instances where men work on stacks by day rate the day rate was advauced from $2.25 per day to $2.75 per day. On double and single machines an advance was given to the amount of about 3 per cent. on large and 10 per cent. on small plates. The classification of plates in these stocks was changed, which will give the men a further advance of about 5 per cent. On the ten-roll Banfield, Thomas and White machine an inequality had existed that worked hardship on the men, which was remedied this year by the company granting an advance of 20 per cent.

Assorters under the existing rates making less than $1.25 per day will receive an advance of 5 per cent. Reckoners receiving less than $1.15 will receive an advance of 5 per cent. Boxers and pickers receiving less than $1.75 will receive an advance of 5 per cent.; scruffmen will receive 10 per cent. advance in Elwood and Anderson works. Plate wheelers receiving less than $2 will receive an advance of 5 per ceut. All other laborers in and around the tin house earning less than $1.45 per day will receive 5 per cent. advance. The reason given by the company for not giving a general advauce to this class of labor was that some iuequalities existed in the rates and it was their idea to put the rates on a more equitable basis.

The gain in the opening department was a matter of gain in couditions rather than in wages. In the past it has not been the custom for the company to handle the iron before being opened. By the settlement reached the company now agree to handle the iron both before and after being opened. In view of the fact that this is a reduction in the amount of the work performed by the openers it is therefore practically an advance in wages.

The difficulty in obtaining an advance in this department is produced by the differential in wages existing between the Eastern and Westeru mills and also the fact that in the Eastern mills boys and women are employed to do the work, the company contending that if any difference, the work of boys and women is more satisfactory. The wage rate for opening plates in the Western mills is at present from 15 to 25 per cent. higher than in the Eastern mills.

PROPOSED CHICAGO TIN PLATE AND CAN COMPANY.

The fact became known during the past week that a number of Western tin plate consumers, including packing and canning interests in Chicago, have been working on a plan to secure an indopendent supply of tin plates and cans. It is proposed to organize a company under the name of the Chicago Tin Plate & Can Company, with a capital of $2,500,000, for the purpose of putting up tin plate and can making factories, of which $1,000,000 is to be 7 per cent. cumulative preferred and $1,500,000 common. It had not been intended by the promoters of this scheme that it should become public at this time, but in some way a confidential circular fell into the hands of a representative of a daily paper. The projectors of the company are unwilling to disclose any more of their plans for publication, but it is stated that the scheme contemplates the erectlon of a complete steel plant, a blooming mill and a sheet bar mill, as well as a 12-mill tin plate plant, with a capacity of about 450,000 boxes annually. The tin can department will adjoin the tin plate plant and be equipped with machinery for turning out 750,000 cans a day, and it is said that the company own valuable patents covering machinery for the manufacture of cans. It is understood that the scheme is backed by practical men who have been connected with both the manufacture of tin plate and cans. Enough is known of the project and its backers to cause considerable confidence to bo placed in its becoming a reality.

The Bostwick Steel Lath Company, Niles, Ohio, have decreased their capital stock from $100,000 to $40,000.

THE CARNAHAN STAMPING & CAN COMPANY.

An important deal was concluded last week whereby the stamped and pieced tinware departments of the H. Wetter Mfg. Company of Memphis, Tenn., will be removed to Canton, Ohio, and added to and operated under the uame of the Carnahan Stamping & Can Compauy. The new company, who have been organized with a capital stock of $300,000, are composed of members of the following firms: The Berger Mfg. Company, the Carnahau Tin Plate & Sheet Company, and the Stark Rolling Mill Company, all of Canton, Ohio, and the H. Wetter Mfg. Company of Memphis. The site for the factory has been located adjoining the plant of the Carnahan Tin Plate & Sheet Company, recently organized, and a three-story brick factory building and warehouses will be erected thereon immediately. In addition to the manufacture of tinware the new company will take up the production of tin cans and enameled ware. The incorporators of the concern are: J. E. Carnahan, William Blecker, Millard Taylor and Edward A. Langenbach of Canton and A. G. Riley of Memphis, Tenn.

The following officers have been elected: President, J. E. Carnahan, president of the Carnahan Tin Plate & Sheet Compauy; vice-president, William Blecker, formerly of the Cauton Roll & Machine Compauy; secretary and treasurer, Millard Taylor of Canton, and general manager, Edward A. Langenbach. The last named is also general manager of the Berger Mfg. Company, the Stark Rolling Mill Company and the Carnahan Tin Plate & Sheet Company. These four companies, which are closely aliied, will work in unison. A great part of tho product of the Carnahan Tin Plate & Sheet Company will be used by the new stamping company, while the black and galvanized sheets manufactured by the Stark Rolling Mill Company will be consumed by the Berger Mfg. Company and the enameled ware department of the new stampiug concern.

It is likely that the plant of the Carnahan Tin Plate & Sheet Company will be increased from an eight-mill to a 12-mill plant. The four plants named when in full operation will give employment to about 4000 hands. Orders have been placed for about $150,000 worth of machinery and equipment for the new tinware plant. Frank C. Graham of Cincinuati, who promoted the deal, will represent the four concerns in the Cincinnati district.

The Canning Machinery Company.

There have been incorporated at Albany a company for the manufacture of machinery with which to make tin cans. They are to be known as the Canning Machinery Company, and the incorporators are Postmaster Francis H. Wilson, Henry E. Hutchinson, prosident of the Brooklyn Bank, and William H. Hibbard, a manufacturer at 85 Washington street, all of Brooklyn. The company are capitalized at $200,000, and besides the three men named there will be interested financially three others, whose names, however, could not be learned. The plant will be established in Brooklyn and will probably give employment to a large number of men. At prosent the preliminary work will be done in the establishment of W. H. Hibbard, who is a machinist of large experience and who controls a number of inventions and patents which will be used in the now enterprise. While the purpose of the company is given as the making of machinery from which tin cans of all classes can be manufactured, it is the ultimate intention to make tho company a general machine and tool making concern. The exact location of the new company has not as yet been determined upon, but it will be in a section of Brooklyn convenient to points of shipment.

The friends of Clark Parsons, the veteran tinsmith of Kingston, N. Y., are congratulating him on his seventy-fifth birthday, which he celebrated on July 16. Mr. Parsons has been in the employ of the Canfield Stove Company for 56 years and is said to be the oldest tinsmith in that part of the country.

The Laughlin Plant.

THE additions which the American Tin Plate Company are making to their Laughlin plant at Martin's Ferry, Ohio, will, when completed, make it the second largest Tin Plate works in the United States, and, in point of modern improvements and appliances, probably the finest of its kind in the world. The new plant will consist of 32 hot mills. It is formed by the consolidation of the machinery of three plants moved from dismantled plants in Cincinnati and the Pittsburgh district, together with the original Laughlin plant. The works throughout will be run by electricity except in the case of the rolls and the heaviest machinery. A complete system of traveling electrical cranes will do away with all trucks, tramways and railroad switches within the works. The plant is piped throughout for natural gas, and it is also provided with generators for the manufacture of coal gas, for use should the supply of natural gas fail. When complete and in operation the works will employ between 5000 and 6000 men. It is expected that the plant will be ready by the end of this month.

Machine for Coating Tin Plates.

Thomas Kendrick of Swansea Valley, England, has patented in this country a machine for coating tin plates, which is described in the patent as follows:

The usual receptacle for the molten coating material is provided, having at one end an open space for the introduction of the plate, and at the other end the delivery rolls. Arranged longitudinally within the receptacle and extending the entire length are two vertical pairs of rods, between which the plates are introduced. A pushing device is mounted to slide on the rods. It has a handle that projects from the receptacle. In the bottom is located a U-shaped trough in which the plate rests. The trough may be adjusted vertically. This trough is made in sections, one of which is disposed directly below the delivery rolls, and has a handle that passes up through the adjacent bath. The plate to be coated is placed with one edge downward in the usual flux box and passing between the guide rolls or rods it is received upon the trough. The pushing device, having been previously drawn back to the feeding end of the receptacle, is then moved toward the rolls, and in this way impelled along in the bath until it is beneath the rolls and on the movable section of the trough. After this position is reached the trough is raised until the upper end of the plate is gripped by the lowermost pair of rollers, when it is removed in the usual manner.

A HUSTLING ROOFER.

George Glines, 134 West Broadway, New York City, is the kind of "hustler" who gets the business. A postal card sent out broadcast by Mr. Glines bears on its face above the address the statement: "I repair skylights, leaders, gutters, metal awnings or anything about any roof." It then goes on to say: "If you have any doubt about your roof, I will examine it and report exactly what condition it is in without charging you one cent. If it needs no repairs I will tell you so. If the roof needs repairs I will guarantee to make it water tight, or no charge whatever. That is my business."

On the back of the card is printed the following:

I DO NOTHING BUT ROOFING.

It doesn't cost much to keep a roof in good condition if you take it in time and do it right. What costs is letting it go until it is in bad shape, and then getting a man who doesn't half attend to it. I am not a plumber, tinsmith, carpenter or general "handy man."

I am a roofer. Roofing is my specialty. I do it promptly, thoroughly, satisfactorily every time; and I do nothing else.

A plumber may be a mighty good plumber, but he isn't a roofer. Perhaps he will mend your roof thoroughly—perhaps not. Very likely he will "send a man." A plumber or tinsmith or hardware man can seldom attend to your roof as promptly and satisfactorily as I can, because he has other troubles of his own. I haven't any troubles but roofing. I take all the troubles there are at that.

I have had 25 years' practical experience in roofing.

I have the materials, tools and skillful workmen to do it right.

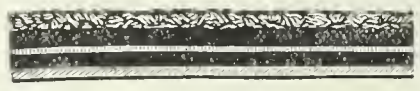
I boss the job myself. I am on hand on every roof that I tackle. I see that it is done as it ought to be. When I am through with it there's no "perhaps" about it.

Without any charge to you I will carefully inspect any leaky or defective tin, gravel, slate, iron or felt roof and submit an estimate of cost to put it in first-class condition.

I have the care of roofs of some of the largest buildings in New York, and my work is widely known for its thoroughness and durability. I can give you plenty of refcrences. All you need do is to drop me a postal card. I will do the rest.

Cork, Asbestos and Gravel Ready Roofing.

Stowell Mfg. Company, 114-134 Culver avenue, Jersey City, N. J., are making several kinds of ready roofings, which are variously covered with cork, asbestos and gravel, according to the requirements of the market or buyer. The cork covered roofing is shown in the accom-



Cork Coated Ready Roofing.

panying illustrations. Fig. 1 is a sectional view indicating it as it is put together, after which it is compressed between heavy rollers to a thickness of but little over ⅛ inch. Fig. 2 reproduces a surface section with the granulated cork, actual size.

Aside from the top layer the materials and method of assembling the different roofings are identical, there being two thicknesses of extra heavy wool felt saturated with asphalt instead of coal tar. The coatings of asphalt cement the two layers of felt and hold on the top layer.

Fig. 2.—Ready Roofing Covered with Granulated Cork.

One of the newer roofings has a top dressing of granulated cork, which is put on while the asphalt is at a proper heat and run between rollers, which securely imbed it in the materlal. This roofing is elastic, nonabsorbent, a nonconductor of heat and will not burn. This roofing is especially recommended by the manufacturers for export, particularly to hot countries, because of its lesser weight, important on account of freight, and also because of the cooler interior where a bullding is so covered. Another ready roofing new to the trade is the same as that described above, except that the top coating is asbestos, an indestructible and fire proof material. There is little difference in weight between the cork and asbestos roofing in a roofer's square (100 square feet).

Another roofing long made by this firm is covered with gravel of various degrees of fineness, the average of the latter being about 50 pounds heavier in a roll of 100 square feet. The gravel and cork coated roofings are about the same price, the asbestos roofing being somewhat higher. All their roofings are guaranteed to be made from the natural Trinidad asphalt, saturated felt and coated with pure Trinidad asphalt only. They

will cheerfully ship on approval with the distinct understanding that if after tho severest comparlson it is not found to be of the highest grade the goods may be returned at their expense. Samples can be obtained from the main office of the company or of their foreign representative, 37 St. Mary Axe, London, E. C., England.

Great Sheet and Tin Plate Strike.

On Saturday night, July 13, President Theodore J. Shaffer of the Amalgamated Association of Iron, Steel and Tin Workers sent out a strike order from Pittsburgh to all the union mills of the American Sheet Steel Company, the American Tin Plate Company and the American Steel Hoop Company, directing all the Amalgamated men employed by those concerns not to go to work on Monday, July 15. This order came as the result of failure to arrive at a settlement of the trouble which had existed in the mills since late in June, when the officials of the Sheet Steel and Steel Hoop companies refused to sign the scale for their non-union mills, as demanded by the Amalgamated Association.

It was confidently expected that at the conference held last week in Pittsburgh between the representatives of the Amalgamated Association and the three concerns named the trouble would have been fixed up and a general strike averted. It was realized that both sides had much to lose by going into a fight, the employees having steady work at the highest wages that have ever been paid, while there was an enormous demand for the products of the three constituent concerns of the United States Steel Corporation above referred to. Moreover, enormous profits were being realized which were needed to meet the heavy fixed charges of the United States Steel Corporation. In spite of all this, the three days' conference failed to effect a settlement, and after the adjournment on Saturday evening the strike order issued by President Shaffer resulted.

When the Amalgamated Association presented their wage scales for the sheet, hoop, bar and tin plate mills for the year beginning July 1, 1901, the advances in wages demanded were conservative and were readily granted by the manufacturers with but slight changes. The Amalgamated Association, however, was prepared to make a more important demand, which was that the scale be signed for all the nonunion mills of the three companies named above. This was refused, the officials of the concerns claiming that in many of their mills the Amalgamated Association had no foothold and that the employees in these mills did not wish to become affiliated with labor organizations of any kind. It was on this rock that the negotiations suffered shipwreck, the result being the declaration of the biggest strike that has taken place since the Homestead strike nearly ten years ago.

The American Tin Plate Company, whose mills have all been closed, with the exception of the Monessen Works, by the strike order of President Shaffer, had no dispute with the Amalgamated Association, but signed the scale as soon as it was presented. Their mills have been shut down by reason of a clause in article 35 of the constitution of the Amalgamated Association, which reads as follows: "Should one mill in a combine or trust have a difficulty all mills in said combine or trust shall cease work until such grievance is settled."

The American Tin Plate Company will be affected most by the strike, as all their mills are union, with the single exception of the Monessen plant, which operates under a special scale. A full list of the plants owned by the American Tin Plate Company, and which are all closed at this writing on account of the strike, is as follows:

American works, Elwood, Ind., 26 mills; Anderson works, Anderson, Ind., 7 mills; Atlanta works, Atlanta, Ind., 6 mills; Banfield works, Irondale, Ohio, 4 mills; Beaver works, Lisbon, Ohio, 7 mills; Canonsburg works, Canonsburg, Pa., 5 mills; Champion works, Muskegon, Mich., 8 mills; Crescent works, Cleveland, Ohio, 6 mills; Cumberland works, Cumberland, Md., 5 mills (no tin house); Cambridge works, Cambridge, Ohio, 6 mills; Ellwood works, Ellwood City, Pa., 6 mills; Falcon works, Niles, Ohio, 6 mills; Great Western works, Joliet, Ill., 4 mills; Humbert works, Connellsville, Pa., 6 mills; Irondale works, Middleton, Ind., 6 mills; Johnstown works, Johnstown, Pa., 2 mills; La Belle works, Wheeling, Pa., 10 mills; Laughlin works, Martin's Ferry, Ohio, 14 mills, adding 8 more mills; Monongahela works, Pittsburgh, Pa., 14 mills; Morewood works, Gas City, Ind., 8 mills; New Castle works, New Castle, Pa., 20 mills; Pittsburgh works, New Kensington, Pa., 6 mills; Reeves works, Canal Dover, Ohio, 7 mills; Pennsylvania works, New Kensington, Pa., 6 mills; Shenango works, New Castle, Pa., 30 mills; Star works, Pittsburgh, Pa., 8 mills; United States works, McKeesport, Pa., 11 mills.

The American Sheet Steel Company are more fortunate than the tin plate company in having some of their largest mills running nonunion, and it is expected that these will continue to run right along in spite of the efforts of the Amalgamated Association officials to shut them down. The nonunion sheet mills which are likely to run are: The Apollo Works at Vandergrift and Apollo, Pa.; the Old Meadow Works and Scottdale Works at Scottdale, Pa.; the Saltsburg Works at Saltsburg, Pa., and the Kirkpatrick Works at Leechburg. These plants combined are able to turn out nearly half of tho entire product of sheets made by the American Sheet Steel Company. In addition to the above named are the Dewees-Wood plant at McKeesport, Pa., and the works at Wellsville, Ohio, both of which turn out specialties in the line of sheets and have been run on a nonunion basis. It was stated that attempts would be mado to start up these works before the end of the present week, but so far nothing much was accomplished in that direction. Late accounts say, however, that the officials expect to have them running by Monday.

Most of the independent sheet and tin plate mills have signed the Amalgamated Association scale for 1901, among them being the following:

The Waynesburg Sheet & Tin mill at Waynesburg, Pa.; the American Rolling Mill Company's works at Muncie, Ind., Middletown, Ohio, and Muskegon, Mich.; the Wheeling Steel & Iron Company, Wheeling, W. Va.; Zug & Co., Limited, Pittsburgh, Pa.; N. & G. Taylor & Co., Cumberland, Md.; Sharon Tin Plate Company, South Sharon, Pa.; Niles Iron & Sheet Company, Niles, Ohio; the sheet mills of the Republic Iron Works, Pittsburgh, Pa., and Newport Rolling Mill, Newport, Ky.

Late advices from Pittsburgh state that the efforts of the Amalgamated Association officials wore being concentrated on trying to get men to come out of the nonunion mills of tho American Sheet Steel Company. So far, however, this has not been successful. It is added that the Amalgamated Association officials seem to have trouble in holding their men in line. Many of the men already seem restless and anxious to return to work, and it is pretty safe to assume that with many of them, if they had to do it over again, they would not go out on a strike. The Amalgamated Association officials on Thursday issued an address to the sheet workers in the nonunion mills giving arguments in favor of joining in the strike.

A phase of the situation toward the close of the week was an offer from the Ohio State Board of Arbitration to bring about a settlement of the strike. The comment on this action made by M. M. Garland, former president of the Amalgamated Association, is to the point: "I cannot see," said Mr. Garland, "what there is to arbitrate in this question. It cannot be settled except by a complete backdown on one side or the other on a matter of principle."

An unusual feature of the present strike is that for the first time in the history of the Amalgamated Association they do not appear to have the sympathy of the public in declaring a strike on the present grounds. The officials of the Amalgamated Association, it is said, were not unanimous in declaring the strike, but, on the contrary, President Shaffer was strongly opposed by some of the leaders in the course he pursued. While nothing official has been given out, one thing is certain, and that is if the United States Steel Corporation have gone into this fight to stay to a finish it means the defeat and ultimate disruption of the Amalgamated Association. The only real strength that body has is in the sheet and tin plate mills, making only about one-half of the output of the American Sheet Steel Company. The present strike is largely one of sympathy, and after the men have been out a week or two and have had time to study the conditions surrounding the strike, it is not unlikely

that numbers of them will return to work. Meanwhile the situation is sufficiently serious, as indicating the possibility of a protracted and costly labor struggle which may involve many allied interests.

FLASHINGS.

THE G. DROUVE COMPANY, Bridgeport, Conn., are doing the copper work on the Blithwood residence in Barrytown, N. Y., and on the Flagler mansion at Palm Beach, Fla. They are also busy with a number of smaller contracts.

T. J. GIBSON & Co., Holyoke, Mass., are completing the gravel roofing of a large block on Chestnut street for John St. John. They also have a large contract for concrete floors for the Chemical Paper Company, Holyoke.

THE bar mill at the American Sheet Steel Company's Falcon Works, Niles, Ohio, is being torn out and will be replaced with a heavier mill, removed from the Struthers, Ohio, plant.

THE Galvanized Sheets made by the New Process Galvanizing Company at Niles, Ohio, are reported to be gaining steadily in reputation, on account of their excellent qualities. The composition coat of lead and spelter with which they are treated is claimed to adhere so closely to the Sheets that they do not crack or peel under any conditions. The company have recently made some considerable importations of Black Sheets from England, owing to inability to obtain a sufficient supply in this country. They state that the quality of the iron they have received from abroad is excellent. The Sheets are made of rerolled Muck Bar and said to be softer and better than the ordinary Steel Sheets. So pleased are the concern with their experimental importations that it is understood they have made a large contract for deliveries of English Sheets extending over a long period.

ONE of the largest Roofing contracts ever let in New England is that for the new building of the New York, New Haven & Hartford Railroad shops at Readville, Mass. It has been secured by the Horton & Hemenway Company of Providence, R. I. The building will all be covered with Perfect Granite Roofing, made by the Eastern Granite Roofing Company, Gerken Building, New York City.

THE AMERICAN SHEET STEEL COMPANY have dismantled the Bar mill at their new Philadelphia, Ohio, plant and will replace it by a Sheet mill.

THE TYLER CAN COMPANY of Baltimore, Md., have taken over the Can making plant of Kirwan & Tyler and will make all kinds of Tin Cans.

AMONG the improvements to be made in the near future in the Sheet and Tin Plate plant of the Lalance & Grosjean Mfg. Company, at Harrisburg, Pa., is the installation of two electric traveling cranes and seven gas producers. Two additional Tin mills and one stand of cold rolls will also be added.

THE new Sheet mill at the American Sheet Steel Company's plant at Struthers, Ohio, is ready for operation and will be put to work as soon as the present labor troubles are settled.

A REPORT from England states that some of the Welsh Tin Plate manufacturers are arranging to visit the United States for the purpose of inspecting the works on this side.

ARTICLES of incorporation of the National Can Mfg. Company were filed this week in Brooklyn, N. Y. The incorporators are: Francis H. Wilson, William H. Hibbard and Henry E. Hutchinson. The company are capitalized at $200,000, $110,000 of which has been paid in. The purpose of the new concern is the manufacture and sale of Can Making Machinery and plain and lithographed Tin Cans.

THE EDWARDS MFG. COMPANY, successors to Art Metal Relief Company, Pike and York streets, Covington, Ky., are now manufacturing a complete line of Architectural and Ornamental Sheet Metal Work and Statuary, Zinc and Copper Ornaments and Relief Work of every description. They are prepared to make prompt shipments and would be pleased to send catalogue showing complete line to parties interested.

THE AMERICAN SHEET STEEL COMPANY have recently purchased about 700 acres of coal lands located near their Ætna Standard Works, at Bridgeport, Ohio. The land adjoins 600 acres bought by the same concern recently.

THE UNCLE HIRAM ROOFING COMPANY of Nashville, Tenn., have been incorporated with a capital of $10,000 to do a general Roofing business by John L. Ward, T. B. Agerton, W. S. Poindexter, W. H. Lindsey and J. E. Scott. The officers of the company are: John L. Ward, president; T. B. Agerton, vice-president, and W. S. Poindexter, secretary and treasurer.

The Persian Dwelling House.

There is still probably in the minds of most people who have not been in the East, says the *British Medical Journal*, a glamour of poetry about the very name of Persia, doubtless traceable to the "Arabian Nights." But, alas, medical science is terribly realistic, and not all the fabled perfumes of Araby can make a Persian town sweet to a sanitarian nose.

According to Dr. M. G. H. Paschayan of Tauris the ordinary Persian dwelling house is the very negation of comfort as well as hygiene. Hidden away behind high mud walls the houses themselves are low and narrow, and have but one opening—to wit, the door. They are caves or holes rather than houses. They are usually some steps below the level of the ground, and the mud roof, which is flat, forms a terrace where the people sleep in summer. The latrines are in a courtyard just outside the dwelling.

The typical room is small, with a narrow window, or rather hole, without glass, and a low door which often does not shut. Air and light penetrate with difficulty, consequently the houses are always damp. There is scarcely any furniture, except a bed, which is on the ground, and is large enough to hold the whole family.

In the houses of the wealthy the floor is covered with the large, soft carpets for which Persia is famous, but in the ordinary houses the floor is formed by the earth, which is bare, or covered only with coarse matting. Along the walls, which are plain mud, not whitewashed, are cushions, but there are no chairs, tables or curtains. The people sit on the ground on their hams, or with their arms crossed in the Turkish manner, and at meals the cloth is laid on the floor. The fire is in the middle of the room. The *tandour*, which takes the place of a stove, consists of a brazier, into which are put small pieces of charcoal, and a square wooden table standing over the brazier, and covered with a large cloth, which hangs down over the sides. It is not surprising to learn that children are often asphyxiated by the carbonic acid and carbon oxide from the smoldering charcoal. These *tandours* are a common cause of rheumatism, owing to the great difference of temperature in them and in the rest of the room. Within the *tandour* it is from 40 to 60 degrees C., while in the apartment it may be as low as 10 to 15 degrees. Only the wealthier Persians have a stove and chimney. There is another *tandour* underground where baking and cooking are carried on. The smokes escapes how it can.

The poorer Persians have little in the way of cooking utensils, while the rich, who possess them in plenty, are utterly indifferent as to their cleanliness. By reason of the extreme filthiness of the dwelling and its furniture, the want of light and air, and the confined space, Persians suffer much from anæmia, phthisis and other diseases depending on insanitary conditions.

The fire loss of the United States and Canada for the month of June, as compiled by the New York *Journal of Commerce*, shows a gratifying decrease as compared with the figures of the preceding months of this year, being $9,599,000, as against $22,380,000 in the preceding month, and $21,281,000 in June, 1900. The total loss for the first six months of the year, however, is very heavy, aggregating $88,935,000.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

CISTERN FILTER.

From E. L. S., Kansas City.—Will *The Metal Worker* or some of its readers kindly advise me of the best way to make a filter for a cistern? The water is to course from a roof and I would like to filter the same before it enters the cistern. Or would it be better to have it made in two parts, divided by a wall, so that the water would filter through same?

Answer.—The following advice on this subject was given by a contributor in a former issue: "In answer to the correspondent who wants to know how to make a filter, I will describe the way I made my filter. I got an oil barrel and cut it in half, and used one part, cutting an 8-inch hole in the center of the bottom. Over this hole I fastened a cylinder of galvanized sheet iron pipe 9 inches in diameter, which was perforated with ¼-inch holes around the bottom, and which extended to the top of the half barrel. I then made a cover of prime lumber to fit the diameter of the half barrel and cut a hole in it at one side to admit the elbow from the conductor pipe. The barrel was then filled two-thirds full of charcoal and about one bucketful of coarse gravel was put on top of the charcoal to mix with it. This I have found a good water filter."

WANTS A SMALL ICE MACHINE.

From F. K., San Francisco, Cal.—I would like to learn through the columns of *The Metal Worker* the process of making ice in small quantities, also how to make such an apparatus, with complete description of its construction.

Answer.—The only ice making apparatus on a small scale or for a few pounds of ice that is simple in construction is operated by adding nitrate of ammonia to water in equal parts in an annular chamber containing a vessel of water to be frozen. The temperature of this mixture falls from 50 degrees to 4 degrees above zero Fahrenheit.

COATING FOR GALVANIZED TANK.

From J. R. Q., Memphis, Tenn.—Having seen the inquiry of "A. L. B." in *The Metal Worker* of July 13, I would suggest that he can probably find no better coating for his galvanized iron tank than a good asphaltum varnish. This is well known as a sticker, and in all probability will not trouble him by peeling off. Further, there is nothing in good varnish of this kind that will detract from the quality of good drinking water, while this is not altogether true of the zinc which forms the galvanized coating of the tank. In all warm climates the purity of drinking water is important. I doubt if zinc, even in small quantities, in solution in drinking water is of any benefit in Florida. So, by all means, the galvanizing should be covered with some impervious coating, and I know of none better to recommend than asphaltum varnish.

SMALL FLUES HINDER HEATING.

From Bedford Park, Brooklyn.—Having seen the inquiry of "J. T. B." in *The Metal Worker* of July 13, I would make the following comments and suggestions: It is probable that a larger cold air supply would prove of benefit. Owing to the point from which the cold air is supplied some benefit may be derived by the use of a cold air room in the cellar and leading a cold air duct from this room to the furnace. This cold air room need not be more than 5 or 6 feet square, but it would go a long way toward preventing reverse action in the cold air duct and so insuring a good flow of warm air from the heating pipes. Inasmuch as the furnace has not been altogether satisfactory, it is probable that if the pipes to the dining and sitting rooms were increased to 12 inches in diameter and connected with floor registers located near the chimney, a substantial improvement would be effected. As the size of the hot air flues leading to the different rooms is not given, it is assumed that they are the thin flat flues ordinarily used in a partition. These are not capable of furnishing any large volume of hot air and frequently are the cause of unsatisfactory heating, large consumption of fuel, necessity of repairs to the furnace, and a hot cellar. The description given of the furnace would lead to the conclusion that it has ample capacity for heating the building in which it is used, owing to the low ceilings. It certainly has capacity for filling pipes of larger diameter than those used. The use of a 12-inch pipe to the hall register might further add to the efficiency. It would be better for "J. T. B." to explain to his customer what he intends to do and leave it to the customer to accept the work, than to guarantee a 70-degree temperature in a building in which he has not run the heating flues, but has to utilize those now existing of whatever size they may be.

CLEANING ZINC.

From M. J., Flatbush, N. Y.—Having seen the inquiry of "W. B." in *The Metal Worker* of July 13, I would say that we have recommended to our customers the use of oxalic acid. This can be purchased at any drug store. If a teaspoonful is dissolved in a half pint of water it will be ready for use. It is only necessary to apply it with a sponge or soft flannel cloth to the zinc to be cleaned. As soon as all dirt and oxidization is removed by the action of the acid the zinc should be washed quickly with plenty of clean water to remove both the acid and the dirt. As soon as washed it should be rubbed dry and polished with dry whitening. This will leave the zinc looking bright and almost the same as new. After this is done, if the suggestion given to coat the zinc with varnish or lacquer is followed, the zinc, where the varnish is not worn off, will continue bright for a long time. This method has been used by our customers for several generations and can be recommended as satisfactory. Elbow grease is quite a factor in securing a satisfactory polish.

From W. T. A., Toledo, Ohio.—If "W. B.," whose inquiry for a method of cleaning zinc appears in *The Metal Worker* of July 13, will buy 5 cents' worth of salts of lemon, called oxalic acid, and place it in a ½-pint cup of hot water, he can clean the zinc, and dry it with whitening and a soft rag. I have used it for 35 years to clean all kinds of zinc goods.

CONFERENCE RESOLUTIONS VIOLATED.

From W. W. C., Kingfield, Maine.—Please inform me whether a wholesale plumbing house has a right to sell a private individual of a water company bathroom fixtures, &c., for his own use.

Answer.—A resolution which has been agreed upon by the National Association of Master Plumbers and the supply associations exempts some corporations, but not the individuals connected with them. It is quite certain that if the question presented was brought to their notice it would be decided that such a sale would be a violation of the provisions of these resolutions.

WILL PIPE COVERING STOP SWEATING?

From G. E. S., East Stroudsburg, Pa.—I wish *The Metal Worker* or some of its readers would inform me of the best covering to use to keep water pipes from sweating in a basement.

The *Commercial and Financial Chronicle* shows the aggregate gross earnings of railroads in the first half of 1901 to be $658,411,827, an increase of $61,580,231 over the first half of 1900, of about $164,000,000 over three years ago and $267,000,000 over six years ago.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is very dull and ¼ cent lower.

Copper is quiet and unchanged.

Pig Lead remains firm and without change.

Spelter is extremely dull at former prices.

Antimony is inactive and unchanged.

Nickel is firm in price and scarce.

Aluminum continues active at former prices.

Tin Plates are from 25 cents to 50 cents a box higher owing to shut down of mills.

Black Sheets are about ¼ cent higher from the same cause, and likely to advance further.

Galvanized Sheets are very strong with upward tendency.

Old Metals are quiet and without change.

Pig Iron is firm with a good tone; prices unchanged.

Sheet Copper continues in good demand at former prices.

Hardware is moving in good volume with prices firm and steady.

Plumbers' Supplies show considerable activity; prices are strong in all lines.

Wrought Iron Pipe is scarce and very strong in price.

Cast Iron Soil Pipe and Fittings are also in large demand and scarce in some sizes; prices hold firm.

Galvanized Range Boilers are likely to be advanced 10 per cent.

Steel Clad Bathtubs have been marked up 5 per cent.

Plumbers' Brass Goods are stiffer.

Radiation has been advanced 10 per cent.

Roofing Slates are firm and in good demand.

Tinware has stiffened on the strength of the strike at mills.

Wire Nails are moving more freely.

Cut Nails are firmer in price.

Wire is in heavy demand and prices rule very firm.

White Lead is unchanged and in moderate demand.

Linseed Oil is firm and may go higher.

Spirits Turpentine is quiet and prices are steady.

METAL MARKET.

Office of *The Metal Worker*, 232-238 William street, New York. July 19, 1901.

Pig Tin.—Business has been very dull, the demand from consumers being extremely tame. The principal reason advanced for this state of affairs is the protracted hot spell, during which many of the Tin Plate mills were forced to close, and the strike which has now shut up almost the entire Tin Plate capacity of the country. The squeeze on spot Tin still continues in London, and prices here are considerably below the figures ruling in that market, although London prices have declined somewhat since last week. Future deliveries here are entirely neglected. At the close prices were merely nominal. Jobbers' quotations are about ¼c. lower than a week ago, Straits Pig in small lots ruling at 28½c. to 28¾c. per lb.

Copper.—The market has been dull and without any points of interest. The demand, both from home and foreign buyers, is limited, and prices show no change from those ruling for some weeks past. Lake Ingot in small lots is quoted at 17¼c. to 17½c. per lb., and Casting Copper at 16¾c. to 17c.

Sheet Copper.—The manufacturers of Sheet Copper report a satisfactory and well distributed demand for their product. Prices are firmly maintained on the basis of 21c. per lb. for moderate sized lots of Sheet Copper from store.

Pig Lead.—No change whatever has taken place in this market. The demand is of moderate proportions and prices are held steadily at 4.60c. to 4.62½c. per lb. for small lots of American Pig. St. Louis advices report that business continues in good volume in that market. Chemical Lead is practically not obtainable and is slightly higher, otherwise prices show no change.

Spelter.—Dullness is the ruling feature of this metal. The strike in the Sheet mills is liable to still further curtail the demand for Spelter, as so many of the large galvanizing plants are closed down in consequence. Good Western brands in small lots are quoted at 4.45c. to 4.50c. per lb. No change has taken place in the St. Louis market. Sales are of ordinary proportions and prices unchanged.

Sheet Zinc.—A fair seasonable demand for Sheet Zinc is reported. Jobbers quote 600-lb. cask lots at 6¾c. per lb. and smaller quantities at 7¼c.

Antimony.—Business is not active and prices are unchanged. Cookson's in small parcels rules at 10½c. to 11c. per lb., and Hallett's at 8¾c. to 9½c.

Nickel—Is firm and without change. Small lots are quoted nominally at 60c. to 65c. per lb.

Aluminum.—The demand for Aluminum continues active at former prices—viz., 37c. per lb. for small lots of No. 1 Ingot, guaranteed 99 per cent. pure, and 35c. for 100-lb. lots.

Tin Plates.—The situation in the Tin Plate market has been unexpectedly complicated by the shut down of practically all the mills. This places the trade in a serious position so far as the consumer is concerned, because the supply of Plates available from sources other than the American Tin Plate Company is extremely limited, and even of that supply a very large share is already controlled by consumers of the goods. Consequently the output at present available for the market is insignificant. As the American Tin Plate Company have been for some time past considerably behind in their shipments on contracts, the present stoppage of output is liable to cause serious inconvenience to the consumers of Tin Plates. In common with Sheets, the demand for Tin Plates of late has outstripped the productive capacity, and stocks are down to the smallest possible limit; in fact, there has been for some time almost a growing famine of certain sizes of Coke Tins. This stringency will now become absolute, as the mills have very little stock on hand available for shipment. The dealers in Tin Plates are naturally anxious as to the future, and rumors are already pointing to the placing of some large orders for Plates abroad. Since early in the current year Plates for prompt shipment have commanded a handsome premium over current rates. Notwithstanding, the American Tin Plate Company have held firmly to their quotations and even recently announced their willingness to take orders for delivery in the last quarter of the year at the figures now ruling. Jobbers who have any stocks on hand are naturally reaping the benefit of the present condition of stringency in the market and have advanced prices from 25c. to 50c. a box or more. They have comparatively little stock to offer, however, consequently quotations can only be given nominally. American Bessemer Coke Plates I C, 14 x 20, are almost impossible to get in small lots at less than $5.25 per box, and I X, 14 x 20, at $6.50 per box.

Sheets.—The immediate effect of the strike of the Sheet mill men has been to stiffen the price of Sheets all along the line. It is recognized by the trade that the shut down of more than half the capacity of the American Sheet Steel Company, when they are already far behind in their deliveries, is going to give serious trouble to consumers. Outside mills that have signed the Amalgamated Association scale are running full and most of

them have marked up their prices, but even with all the independent mills in operation, together with the non-union plants of the combine, the aggregate output of Sheets will necessarily fall far behind the consumptive demand, which is still extraordinarily heavy. Stocks in jobbers' hands are extremely light, and of some of the more popular gauges they are practically bare. Prompt delivery of any kind of Black or Galvanized Sheets cannot be had from any quarter, except at a handsome premium over the regular prices. Light Sheets are especially scarce. Jobbers in this district have generally advanced their quotations on Black Sheets, but such advance is not regular, consequently it is impossible to give absolute quotations on Sheets at this time. For purposes of record we may quote nominally No. 27 Black, One Pass Cold Rolled Soft Steel Sheets at 3.85c. to 3.95c. Galvanized Sheets continue in very heavy demand and are also hard to obtain except in quite small lots. The conditions governing this class of Sheets are similar to those above outlined in connection with Black Sheets, consequently prices, although not marked up in the same ratio, are very strong and with every indication of an early rise. Jobbers are quoting Galvanized Sheets in small lots at 62½ and 5 per cent. to 65 per cent. off. The condition of things in the Sheet market, as developed by the strike, indicates serious possibilities in the near future, should the shut down of the mills be prolonged. The mills for some time past, while operating to their fullest capacity, have been unable to keep pace with the existing demand. With the prospect before them of a material reduction in the output for an indefinite time and the bare condition of their own stocks jobbers are anxious as to the future. Consumers are clamoring for shipments which they are unable to make. Already there is a talk in the trade of orders for Sheets being placed abroad, but the importers as a rule are hesitating about placing any substantial orders on the other side, because they could not well obtain shipment of the same sooner than a month or six weeks ahead, by which time the domestic mills, it is to be hoped, will again be in operation. It is more than likely, however, that if no signs of a settlement appear within a week or two that a good deal of business will go across the water. Meanwhile, consumers who are figuring upon contracts involving the use of Sheets will do well to communicate immediately with their jobbers, with a view of assuring themselves as to the prospect of obtaining supplies of material, and also to learn at what prices they can buy, for there is no telling from day to day how the market will go.

Chicago advices are as follows: The trade has been thrown into a state of consternation by the strike in the Sheet mills. Manufacturing consumers have been unable to accumulate any stock owing to the oversold condition of the mills for the last six months, and they find themselves encountering a condition of absolute scarcity. The independent mills can only supply a small fraction of the requirements of the trade. Jobbers are saving their stocks as much as possible, and no suspicion of a cut price is now entertained. The demand on their stocks is heavy and will continue to become more so if the strike lasts any length of time. Black Sheets are held at 3.40c. upward for No. 27, depending on the views of the seller, while Galvanized Sheets cannot be had lower than 70 off with a disposition to advance prices to 65 and 10.

Old Metals.—Comparatively little business is doing but prices remain without material change. Dealers are paying about the following prices for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 15 c.
Light and Tinned Copper	per lb. 13½c.
Heavy Brass	per lb. 10 c.
Light Brass	per lb. 8 c.
Lead	per lb. 4 c.
Tea Lead	per lb. 3½c.
Zinc	per lb. 2¾c.
No. 1 Pewter	per lb. 18½c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	$6.00
Wrought Iron Scrap, per gross ton	$10.50 to 11.00
Heavy Cast Scrap, per gross ton	10.00 to 10.50
Stove Plate Scrap, per gross ton	7.00 to 7.50
Burnt Iron, per gross ton	5.00 to 5.50

THE PIG IRON MARKET.

New York.—The market in this district has been very flat, sales being very limited. Some keen competition has developed between Southern makers over one moderate sized order in New England. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $14.75 to $15; No. 2 Foundry, $14 to $14.50; No. 1 Soft, $14.50 to $15; No. 2 Soft, $14 to $14.50; No. 3 Foundry, $13.25 to $13.50; No. 4 Foundry, $12.75 to $13.25.

Chicago.—Furnace agents have done some business during the past week, but it has included very little Foundry Pig Iron. The immediate cause of lack of demand for Foundry Iron is the strike of molders, which began Monday morning, but happily confined to Chicago and seems not likely to spread. Foundrymen are not disposed to purchase materials until they know that a settlement is to be effected. Prices continue about the same as previously reported. The local furnace companies are not disposed to make lower quotations, having their order books well filled for the greater portion of the year. The Southern companies are in the main fairly firm and a large Virginia company selling in this market announce that no effort will be made to secure large business, as the company are now in possession of good contracts which will keep them in excellent condition for several months. Southern Foundry Iron may perhaps be shaded 25c. per ton on our quotations. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon	14.90 to 15.15
Southern Coke, No. 1	14.65 to 14.90
Southern Coke, No. 2	14.15 to 14.40
Southern Coke, No. 3	13.65 to 13.90
Southern Coke, No. 1 Soft	14.65 to 14.90
Southern Coke, No. 2 Soft	14.15 to 14.40

Philadelphia.—The market has a good tone and prospects for the near future are regarded as favorable. Stability and uniformity are the leading features. Conditions are such that there cannot be much, if any, change in prices, and for the present there seems to be nothing in sight likely to cause any serious interruption. Consumers of Iron in this vicinity have bought liberal quantities, some for deliveries during the third quarter; others have covered for the entire year, besides which there is an excellent day to day demand. Operations of this character indicate a degree of confidence which is very encouraging, and is ample proof that as yet business is not taking any back tracks. Prices are virtually the same as for some time past. For the general run of business prices are about as follows for Philadelphia and equivalent points: No. 1 X Foundry, $15.75 to $16; No. 2 X Foundry, $15 to $15.25; No. 2 Plain, $14.25 to $14.50.

Pittsburgh.—The market is practically lifeless, all interest being centered on the strike. The nominal price of Bessemer Iron in small lots is $15.25, Valley, or $16, Pittsburgh. None of the large consumers are buying, and only small lots of 25 to 50 tons are selling. Foundry Iron is quiet and prices seem weak. We quote: No. 1 Foundry, $14.50 to $15; No. 2, $14 to $14.50; No. 3, $13.75 to $14. We note a sale of 100 tons of No. 2 Foundry at about $14.10, Pittsburgh.

Cincinnati.—The situation in the Pig Iron market shows a very decided change for the better. It is estimated that the selling agencies at this point booked about 50,000 tons of new business within the past seven or eight days. The selling, however, was done at something of a concession on the quotations as given herewith. One thing appears very manifest, and that is that the market is much stronger and brighter than it has been for quite a number of weeks past. Judging by the volume of inquiry there will be a pretty fair amount of business transacted throughout the coming week, and while prices may not start upward just immediately it is pretty safe to say that there will be no more cutting for the time being. Among the trades made were quite a number for Northern Iron, which

still maintains a relatively stronger position in the market than the Southern product. We quote, f.o. b. Cincinnati:

Southern Coke, No. 1	$13.50 to $13.75
Southern Coke, No. 2	13.00 to 13.25
Southern Coke, No. 3	12.25 to 12.75
Southern Coke, No. 4	11.75 to 12.00
Southern Coke, No. 1 Soft	13.50 to 13.75
Southern Coke, No. 2 Soft	13.00 to 13.25
Southern Coke, Gray Forge	11.75 to 12.00
Southern Coke, Mottled	11.75 to 12.00
Ohio Silvery, No. 1	15.50 to 16.00
Ohio Silvery, No. 2	14.50 to 15.00
Lake Superior Coke, No. 1	14.50 to 15.00
Lake Superior Coke, No. 2	14.00 to 14.50
Lake Superior Coke, No. 3	13.50 to 14.00

ST. LOUIS.—There has been considerable improvement in the demand for Pig Iron during the past two weeks and all indications are favorable for continued improvement. The market may be said to be active and satisfactory, but in prices there is but little change. Several large sales were reported last week. We quote carload lots as follows, f.o.b. St. Louis:

Southern, No. 1 Foundry	$14.25 to $14.50
Southern, No. 2 Foundry	13.50 to 13.75
Southern, No. 3 Foundry	13.00 to 13.25
Southern, No. 4 Foundry	12.50 to 12.75
No. 1 Soft	14.25 to 14.50
No. 2 Soft	13.50 to 13.75

CHICAGO REPORT.

Scrap Iron and Steel.—Trade is light. Consumers are buying practically nothing and dealers are waiting for developments. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap	$10.50 to $11.00
Machinery Cast	10.00 to ....
Malleable Cast	10.00 to 11.00
Stove Plate (free from burnt)	7.00 to 7.50
Burnt Iron and Grate Bars	5.50 to 6.00
Sheet Iron and Hoops	6.00 to 7.00
Plow Steel	9.00 to 10.00
Breaking Stock	9.00 to 9.50
No. 2, such as Shovels, Hoes, &c	.... to 7.00
Old Boilers—whole (Iron)	.... to 7.00
Old Boilers (Iron) cut in single Sheets and Rings	9.50 to 10.00
Old Gas Pipe and Boiler Tubes	9.50 to 10.00
Cast Borings	.... to 3.75
Turnings	8.00 to 8.50
Horseshoes	11.00 to ....

Old Metals.—The market is dull, but prices are holding fairly steady. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	15 c.
Copper Bottoms	13½c.
Copper Clips	14½c.
Red Brass	13½c.
Yellow Brass	10 c.
Red Brass Borings	11½c.
Yellow Brass Boriugs	9 c.
Light Brass	7¾c.
Pipe Lead	4 c.
Tea Lead	3½c.
Zinc	2¾c.
Pewter, No. 1	19 c.
Pewter, No. 2	10 c.

Old Rubber.—Dealers report very little business. Buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$23.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7¾c.
Rubber Car Springs	....	4¾c.
Inside Bicycle Tubing	....	21 c.
Outside Tubing	....	7¼c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—Dealers are having a heavy trade and report a short supply in local yards, with no Egg in stock. Another advance will be made August 1. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis	5.75	6.00
St. Louis	6.25	6.50
Kansas City, Mo	8.25	8.50

A discount of 20c. from these figures is allowed on all Coal ordered to be shipped in July.

THE HARDWARE TRADE.

There have been thus far very few changes in price during the present month. There has been especially very little new in the way of announcement of revised list prices. Some revised discount sheets have been issued and others are to be expected. Many minor changes have been made by manufacturers in preparing for the fall business, but, as a rule, prices are without important modification. The tone of the market generally is decidedly firm. In some lines a strong and confident feeling prevails. The strike among the Steel workers naturally attracts the attention of all branches of the trade, and it is recognized that much depends on the course things may take. A possible shortage of material is one of the results which is apprehended if the contest is of long continuance. In this case inconvenience will be caused manufacturers and the trade, and possibly higher prices in some lines may develop. Business throughout the country continues to move along in excellent volume. Manufacturers are beginning to send out travelers and are receiving their first reports, which are said to indicate a very satisfactory condition of things. The jobbing trade are preparing for a large business, and in some lines have been placing their orders a little earlier than usual. The smaller trade are generally doing a good business. Notwithstanding the damage caused to the crops by the drought, the prevalence of which it is hoped has been broken, the crop conditions are unquestionably on the whole favorable, and a basis for substantial prosperity throughout the country at large is thus laid. There is little ground for special complaint in regard to collections. Altogether, the situation continues satisfactory and the outlook promising.

NOTES ON PRICES.

Wrought Iron Pipe.—The Wrought Iron Pipe market is getting into a more chaotic condition as the days go by. It is probable that not a single jobber in New York City to-day has a complete stock, *i.e.*, a stock of Pipe containing all of the different sizes used by the plumbing and heating trade. If they are long on some sizes they are short on others. The galvanizing plants are glutted with Pipe awaiting an opportunity to be galvanized. All of the jobbing houses are complaining of the scarcity of Galvanized Pipe, and they are willing to buy it at any price in order to fill orders placed with them some time ago, thereby lessening the complaints which are continually pouring in upon them. Three-quarter-inch Black and Galvanized Pipe is practically an unknown quantity in this section; ½-inch pipe, both Black and Galvanized, is reported to be extremely scarce this week; and 1¼-inch Pipe, while not so much in demand as it will be a month from now, is held at a higher price than are the 1 inch, 1½ inch and other sizes. This discrimination in the prices of the different sizes is due entirely to the demand for these particular sizes. The jobbers realize the fact that the plumbers and steam heating contractors must have these sizes to complete their work, and they also realize the fact that there is no possibility of procuring shipments from the mills under two months at the earliest, so they do not hesitate to make all the money they can while the present situation lasts. Under these circumstances our quotations on Wrought Iron Pipe must be taken as merely approximate, for it is impossible to give them absolutely.

Cast Iron Soil Pipe and Fittings.—Cast Iron Soil Pipe and Fittings, particularly the 4-inch standard and 4, 5 and 6 inch extra heavy sizes, are extremely scarce. It is said that none of the Eastern plants operated by the Central Foundry Company have any considerable stock of these sizes on hand. This condition of affairs is also true of the foundries of the independent manufacturers. There has been an enormous demand for all kinds of Pipe and Fittings; shipments have been slow and all of the plants of the Eastern founders are running much beyond the allotment accorded them by the pool. This condition of affairs is likely to continue until well toward the end of the year. The present agreement between the manufacturers, it is understood, will be re-

newed at that time, and prices maintained all through next year. There are no new foundries going up; and even if there were the demand is so great, and will continue so for some time, that the advent of new manufacturers would not change this phase of the market. The trade is satisfied with the prices now quoted. This is true of the jobber as well as of the plumber, and so long as there are no complaints on the score of prices, and the present condition of stability remains, the only question of importance remaining is the matter of getting shipments more promptly. If any change takes place within the next month, it probably will be in the nature of an advance over the prices now in effect.

Galvanized Kitchen Range Boilers.—The strike of the Steel workers has forced upon the manufacturers of Kitchen Range Boilers the fact that it will be impossible for them to secure any Steel or Iron Sheets with which to make their Boilers, and as the stock of Sheets now on hand is very low in all of the plants controlled by the Range Boiler Association, there will almost certainly be an advance within the next few days which is likely to be in the neighborhood of 10 per cent. over the prices ruling since the middle of April. The condition of the Range Boiler Association is much better at the present time than it has been at any time during this year. There are less orders for Boilers on hand at present than there have been since the formation of the association. All of the manufacturers are having difficulty in procuring the raw material, and none of them are anxious or in a position to take the business at any prices other than those issued by the association.

Steel Clad Bathtubs.—The manufacturers of Steel Clad Bathtubs and All Steel Enameled Bathtubs advanced prices 5 per cent. on the 15th inst. This advance is credited to the fact that there is a very limited number of Sheets on hand at any of the plants where these Tubs are made. It was learned this week that one of the manufacturers has had orders placed for Steel Sheets since December of last year, and will not be able to get them before next month, and unless the strike at the Sheet mills is settled promptly, this manufacturer will not be able to get the Sheets in that time. The jobbers in New York, who have a stock of these Tubs, are holding them for higher prices. The cost of "pick ups" in New York City on all kinds of goods into which Sheet Steel and Sheet Iron enter has been advanced 10 per cent. This, we learn, is owing to an agreement at which the jobbers have arrived with themselves, as they feel that the strike at the mills is liable to be a protracted one, and that even if it is settled promptly, the manufacturers will probably take advantage of the threatened scarcity and will advance prices at least to that extent.

Plumbers' Brass Work.—The recent failure of one of the largest manufacturers of Plumbers' Brass Goods has had the effect of stiffening the market for this class of goods. It is said that low prices were the cause of the failure of this concern, and it is also claimed that there is not a manufacturer of Plumbers' Brass Goods who has made any profit on his product for the past two years. This, we are informed, is due entirely to the disagreements between members of the Association of Manufacturers of Plumbers' Brass Goods. Unlike the members of the other associations in the metal trade, the members of the Brass Manufacturers' Association seemed to distrust each other and to have a lack of confidence in themselves. The large manufacturers tried, by making low prices, to drive the smaller manufacturers out of the business, but as the smaller manufacturers were so many and the variety of their wares was so great, in the end some of the large manufacturers had to succumb. The smaller manufacturers can operate their plants at a much less cost than can the large ones. Each plant makes a limited number of articles and each article is manufactured in large quantity. They can set their machinery to make a large run on a particular size and kind of article and do not have to change to any considerable extent, and in this way they can run their plants more economically and with a cheaper grade of labor than can the manufacturers who have large, cumbersome plants in which every variety of apparatus and device used by the trade is manufactured.

Radiation.—The American Radiator Company of Chicago, under date of July 13, announced to the trade that they had that day advanced prices 5 per cent. on all Direct Radiation manufactured at their Standard, St. Louis, Steele and Elwood plants, and 2½ per cent. on Ideal Steam. The company state that new discount sheets will be furnished promptly on application. The United States Radiator Company, Dunkirk, N. Y., under date of July 17, sent the following notice to the trade: "On Saturday, July 20, new prices will be effective on our entire line of Radiation. Orders accompanied by specifications mailed up to midnight Friday, the 19th, will be accepted at present prices."

Pumps.—The market for Cistern Pumps, Pitcher Spout Pumps, &c., is in a much better condition than for some time. The arrangement recently entered into by the manufacturers by which advanced prices have been established is said to be working satisfactorily. Present prices are represented by the following discounts:

Cistern Pumps, Iron.....60 %
Pitcher Spout Pumps, fitted for Iron Pipe.....75 %

The manufacturers refer to the prices which have recently been ruling as unremunerative, and allude to the condition of the market as justifying the advance which has been made.

Shot.—The Shot market is characterized by more regularity than for some time, and the base price of $1.50 for Drop Shot up to B is announced by substantially all the manufacturers. The combination which has been formed is referred to as in excellent control of the market. A trade discount on ton lots of 5 cents per bag is made, with 2 per cent. discount for cash in 10 days.

Roofing and Building Papers.—Manufacturers of Tarred Roofing and Building Papers are fairly full of business along the whole line. Prices are in general pretty well maintained, although there is no trouble in getting the goods.

Roofing Slates.—The Roofing Slate trade is enjoying a season of exceptional activity. The demand for Slates shows a material increase over former seasons and is well distributed throughout the country. Stocks, both at the Pennsylvania and Vermont quarries, are light and in some grades of Slates there is something of a scarcity. Dealers are unable to obtain prompt shipment of orders and find difficulty in supplying the wants of their customers. Prices are firm all along the line. The agreement between the Pennsylvania manufacturers is being strictly maintained and the Vermont quarrymen are also holding up their prices firmly. A slight advance was announced last week in the price of No. 1 Albion, otherwise quotations have not been changed since the last general price-list was issued in May.

Tinware.—The strike in the Sheet and Tin Plate mills if of long continuance is likely to seriously embarrass the manufacturers of Tinware, Japanned Ware and other Sheet Metal goods. Some concerns in this line are already refusing to receive carload orders and will take only orders for small lots subject to the condition of their stock. Stocks of Sheets and Tin Plates are small, and with the prospect of a large portion of the productive capacity being cut off, the outlook is decidedly serious. Prices, under the circumstances, are very strong, with every chance of advancing in the near future should the strike continue.

Wire Nails.—Some improvement in the local demand for Wire Nails in New York has been noticed during the week. Quotations are firm at $2.60 per keg for small lots from store.

Cut Nails.—The New York Cut Nail market is somewhat firmer, the minimum price being referred to as $2.18 per keg from store. Prices range from this figure to $2.25, according to customer and quantity.

Wire.—The demand for Plain Wire continues large and the mills are still considerably behind in deliveries. Prices are firm and unchanged at 2.60c. per pound for Plain Wire and 3c. for Galvanized.

White Lead.—The demand for White Lead in Oil is comparatively light, both on account of the season and

the high price of Linseed Oil. No change in quotations has been made, but some irregularity in prices is reported in the case of large orders. Small lots of White Lead in Oil are quoted at 7 to 7¼ cents per pound.

Linseed Oil.—The price reached by Linseed Oil is the highest for a number of years, and there are intimations of a further advance, but this rumor is not officially confirmed. There is little Oil offered for sale outside of the controlling interests. The demand is confined to orders for immediate requirements and is growing somewhat smaller. With the advent of the new crop of Flaxseed it is anticipated that lower prices for Oil will rule. City Raw Oil is quoted at 83 to 84 cents per gallon in a retail way. Boiled Oil is 2 cents per gallon advance on Raw.

Spirits Turpentine.—The local market has been quiet during the week, with a comparatively light demand. Prices for Turpentine are steady, small lots being quoted at 38 to 38½ cents per gallon.

New Publications.

HOUSE CHIMNEYS. Published by the David Williams Company, 232-238 William street, New York. Price 25 cents. Size, 5½ x 7¾ inches. 62 pages; 40 illustrations.

Not infrequently the stove dealer, furnaceman, or steam and hot water heating contractor has trouble with the apparatus connected with the chimney, either owing to constructive defects or faulty connection. In the absence of a sufficient experience to aid in determining the cause of the difficulty, much annoyance to customers and loss of time and money is sometimes experienced. With a view to furnishing aid under such circumstances the book, "House Chimneys," is presented. It contains a number of articles treating of the construction of chimneys and the results that invariably follow the little defects and want of care in the arrangement of flues and the connection with them of the smoke pipes. These articles have appeared in *The Metal Worker*, and the demand for them, as a result of the excellent information they contained, has led to their presentation in pamphlet form. The various articles contain just such information on the principles governing the construction and operation of chimneys as will enable those who meet trouble to form, on general principles, some idea of the cause of the difficulty, so that they may apply a remedy adapted to the cause. One of the articles describes devices for lessening the strength of the draft, and a formula and tables are provided for determining the size of chimney required for a given work with hot water and steam boilers and hot air furnaces. The book also shows various styles of chimney tops adapted for improving defective draft under certain conditions. One article is devoted entirely to chimney tops, defective flues and methods for improving weak chimneys, overcoming condensation in chimneys, and stopping down drafts. Contributions of a number of correspondents in reference to baking in cooking stoves are also included, and the book contains a fund of useful information calculated to assist those who are confronted with difficulties in the line of chimney practice.

The Guggenheim Smelting Company of Perth Amboy, N. J., have a customs protest pending before the Board of United States General Appraisers involving the proper interpretation to be placed upon certain provisions of section 29, act of 1897. As the law stands at present metals intended for reduction here and exportation afterward are permitted to be treated as bonded merchandise. The importers claim that the trade should only be compelled to export 90 per cent. of the refined metal, whereas the Government contends that the importers must export 90 per cent. of what the metals assay when imported. It is said to be impossible to do this with alloys.

THE YOUNGSTOWN FOUNDRY & MACHINE COMPANY, Youngstown, Ohio, contemplate making some large additions to their plant. For this purpose a meeting of stockholders will be held on July 16, at which time the capital stock will likely be increased from $50,000 to $75,000, to provide funds for these additions. The business of the Youngstown Foundry & Machine Company in the manufacture of Rolls and Rolling Mill Machinery of all kinds is growing steadily and the firm have made some large additions to their plant since the initial works were started. It is found imperative, however, to again increase the capacity, in order to keep up with their business.

United States Commercial Agent Johnson of Stanbridge, Canada, reports a discovery for the preservation of wood. The sap is removed from timber, and at the same time it is impregnated with chemicals, to render the wood either fire proof or impervious to attacks of insects or to decay in salt or other waters. Beech wood can be made suitable for railway sleepers or for boot and shoe lasts. If necessary, the impregnating plant can be used at the felling ground. The cost of impregnating is about 2 cents per cubic foot; cost of plant, about $1000.

CONTENTS.

	Page
Editorials—	
The Metal Worker Index	31
Living in Glass Houses	31
The Growth of Urban Population	31
The Strike in the Western Rolling Mills	32
The American Society of Heating and Ventilating Engineers	33
David U. Cory	34
Garland Oak Stoves	34
American Stoves in Europe	35
Thatcher Ranges	35
White's Stoves and Ranges	35
The Jahant Furnace	36
Red Cross Stoves and Ranges	36
Quick Meal Steel Ranges	36
Welcome Stoves and Ranges	36
Odd Plates	37
Trade Notes	37
Protector Woven Steel Covered Hose. Illustrated	38
Bad Accounts	38
Miller Ideal Student Lamp. Illustrated	38
Reflectors for Acetylene Lighting	39
Stove and Hardware Dealers	39
New York Trade School Catalogue	39
Advance in Radiation	40
The Hendler Portable Acetylene Generator. Illustrated	40
Selling Acetylene Generators	41
The Use of Heating Coils	41
Tests of Radiators with Superheated Steam	41
Connecticut Plumbers' Committees	43
New York City Notes	43
Volume of Water in Hot Water Heating Apparatus. Illustrated	43
Tin Lined and Lead Lined Iron Pipe. Illustrated	44
Heating and Plumbing Notes	44
New Firms and Changes	46
The Uses of Cement	46
The Baron De Hirsch Trade School	46
Brazing Brass to Copper	46
The Tin House Wage Scale	47
Proposed Chicago Tin Plate and Can Company	47
The Canahan Stamping & Can Company	47
The Canning Machinery Company	47
The Laughlin Plant	48
Machine for Coating Tin Plates	48
A Hustling Roofer	48
Cork, Asbestos and Gravel Ready Roofing. Illustrated	48
Great Sheet and Tin Plate Strike	49
Flashings	50
The Persian Dwelling House	50
The Letter Box—	
Cistern Filter	51
Wants a Small Ice Machine	51
Coating for Galvanized Tank	51
Small Flues Hinder Heating	51
Cleaning Zinc	51
Conference Resolutions Violated	51
Will Pipe Covering Stop Sweating?	51
Trade Report—	
Market Summary	52
Metal Market	52
The Pig Iron Market	53
Chicago Report	54
The Hardware Trade	54
Notes on Prices	54
New Publications	56
Metal and Miscellaneous Prices	57
Labor Exchange—	
Help and Situations Wanted	61

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED JULY 19, 1901

The following New York quotations are for small lots:

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots.....₩ lb, 37¢
100-lb lots.....₩ lb, 35¢
Aluminum Sheet, B. & S. gauge.
In lots of 50 lbs or more.

Wider than.....	6-in.	14-in.	24-in.
And including.....	14-in	24-in.	30-in.
	₩ lb	₩ lb.	₩ lb.
Nos. 13 to 19.....	$0.42	$0.44	$0.47
" 20.....	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24.....	.48	.50	.53
" 25.....	.47	.51	.54
" 26.....	.47	.54	.59
" 27.....	.48	.57	.62
" 28.....	.48	.57	.64
" 29...	.49	.60	.69
" 30.....	.50	.64	.77

Note.—Lots of less than 50 lbs 5¢ ₩ lb extra.

Antimony—

Cookson.....₩ lb. 10½@11¢
Hallett's .. ..₩ lb, 8¾@9½¢
U. S.....₩ lb, 8¾@9¼¢

Brass—Planished.....net

Roll and Sheet.....15@20% off

Brass and Copper Tubes

Brazed Brass Tubing—

Brown & Sharpe's Gauge the Standard.

List Feb. 26, 1896.

Plain Round Tube.	Per lb.	
¾-in. up to 2-in.....	$0.35	30&5% off
⅝-in. up to ¾-in.....	.36	
½-in. up to ⅝-in.....	.38	
⅜-in. up to ½ in....	.41	
5-16-in. up to ⅜-in.....	.48	
¼-in. up to 5-16-in.....	.65	
3-16-in. up to ¼-in.....	1.00	
⅛-in. up to 3-16-in.....	1.50	
Smaller than ⅛-in.....	Special	
3-in. and larger.....	Special	
2-in. to 3-in. to No. 19, inclusive.	.38	

Copper & Bronze Tubing—

3¢ ₩ lb more than Brass.

Conductors—

Corrugated. *Round or Square.*—

Galvanized ½ or more. N'st'd.....70&5%
" Not Nested.....70&2½%
" Plain Round, ½ or more, Nested.....70&5%
Galvanized, Plain Round, Not Nested. 70&2½%

Spiral Riveted.

Galvanized 40%
See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor*

Conductor Strainers—See *Strainers, Conductor.*

Copper—

Lake Ingot..... ...17¼@17½¢
Casting..... .....16¾@17 ¢
Sheet and Bolt.....21¢ ₩ lb basis
Cold Rolled Sheets.....22¢ ₩ lb basis
Cold Rolled and Polished Sheets ..... 23¢ basis
Planished Sheets.....24¢ basis
Bottoms, Pits and Flats .....₩ lb 25¢ basis

Eaves Troughs—

List Feb. 1, 1895.
Lap or Slip Joint, Galvanized, in crates 75&10%

Eave Trough Mitres—

Lap or Slip Joint.....list, 25%

Elbows—Plain Adjustable—

Eastern List.
Tin.....30%
Galvanized..... .....30%
Perfect Elbows.....40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-Inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz
No. 2.	.65	.70	.75	.80	.85 "
No 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Corrugated

Round or Square.

Galvanized 60%

Gasoline—See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16.....₩ lb	3.55...	3.60¢
Nos. 18 to 21.....₩ lb,	3.65....	3.70¢
Nos. 22 to 24.....₩ lb,	3.75....	3.80¢
Nos. 25 and 26...₩ lb,	3.85....	3.90¢
No. 27 ... .₩ lb,	3.95....	4.00¢
No. 28 .....₩ lb,	4.05....	4.10¢

Russia, Planished, &c.

Genuine Russia, according to assortment.....₩ lb 10½¢
Do. Stained.....6¢@10¢
Patent Planished. ₩ lb A, 9¼¢; B, 8¾¢ net

Galvanized.

Nos. 10 to 16.....₩ lb, 12¢
Nos. 17 to 21. .....₩ lb, 13¢
Nos. 22 to 24.....₩ lb 14¢
Nos. 25 to 26.....₩ lb, 15¢
No. 27.....₩ lb, 16¢
No. 28.....₩ lb, 17¢
No. 29.....₩ lb, 19¢
No. 30.....₩ lb, 21¢
36 in. 1¢ ₩ lb higher
} 62½&5@65% off

Kerosene—See *etroleum Products*

Lead—

American Pig..... .....4.60@4.62½¢
Bar..... .5⅛@5¼¢
Pipe.....6½¢.....20% off
Tin Lined Pipe.....12½¢.....20% off
Block Tin Pipe .....40¢.....20% off
Sheet Lead, full rolls.. 7¼¢ .....20% off
Sheet Lead, cut.....7¾¢.....20% off
Old Lead in exchange, 1⅛¢ ₩ lb.

Mitres, Eave Trough—See *Eave Trough Mitres.*

Nickel—

Per lb.....60@65¢

Paints, Oils, &c.—

Lead, White, Atlantic and Jewett's. 7¼¢
Lead. Amn. White, in oil..... 7@7¼¢
Lead, Red. bbls. and ½ bbls..... 7@7½¢
Lead, Red, kegs.... ..... 7@7¼¢
Linseed Oil:
Raw, ₩ gal..... ... .83@84¢
Boiled..... .. ..85@86¢
Spirits Turpentine:
In bbls.....38@38½¢
In cases.....16@ 46½¢
Putty:
In barrels and ⅛ bbls..... .....2½
In tin cans..... .....3½
In bladders ....2¼¢

Palm Oil. 1500 lb casks.

Fancy Lagos.....₩ lb 6 ¢
Clarified.....₩ lb 5¾¢
Accra .....₩ lb 5½¢
Half Jack .....₩ lb 5¼¢

Petroleum Products—

In Barrels (Barrel Included)
Stove Gasoline.....₩ gal. 12½@13¢
Kerosene..... ₩ gal. 13@13½¢

Pipe, Drain..... ....40%

Pipe, Spiral—See *Conductors*

Registers—

List Feb. 1, 1899.
Black Japanned..... .. 50&10%
White Japanned.....40&10%
Nickel Plated.....50&10%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze.....40%
Electroplated in Brass, Bronze or Copper..... .....40%
White Porcelain..... .....20%
Solid Brass and Bronze Metal.....20%

Roofing Material—

Heavy Slugle Ply Tar Felt,..... ₩ to 1 $1 00
2 Ply Roofing Felt...₩ roll, 108 sq. ft. 85¢
3 Ply Roofing Felt....₩ roll, 108 sq. ft. 85¢
Roofing Pitch ₩ bbl.....$2 35

Rosin

(Barrels of 280 lb. Barrels weigh actually about 400 lb).
Common and Good—Strained.
Rosin, C. & D.....₩ bbl. $1.55 @$1.60
Rosin, E. & F.....₩ bbl. 1.65 @ 1.70
Rosin, G. & H.....₩ bbl. 1.75 @ 1.85
Rosin, I. & K .....₩ bbl. 2.00 @ 2.40
Rosin, M. & N.....₩ bbl. 2.65 @ 3.00

Seamless Brass Tubes—

Net List, February 6, 1899.

Shoes and Elbows—See *Elbows and Shoes.*

Slate Roofing—

According to size, f. o. b. cars, Quarry Station.
Pennsylvania:
Best Bangor, ₩ sqr. .. ...$3.25@$4.50
No. 1 Bangor Ribbon. ₩ sq 3.00@ 3.50
Pen Argyle. ₩ sqr. ..... 3.00@ 3.75
Peach Bottom, ₩ sqr..... 4.85@ 5.60
No. 1 Boys, ₩ sqr..... 3.35@ 3.55
No 1 Chapman Keystone ₩ sqr..... .. .. 3.25@ 4.25
Vermont:
Sea Green, ₩ sqr.....$2.00@$3.00
Purple, ₩ sqr..... .. 3.75@ 4.25
Unfading Green, ₩ sqr... 3.25@ 4.50
Red, ₩ sqr ..... 6.50@11.00
Maine:
Brownville, Unfading Black:
No. 1 quality..... .....$5.25@7.50
No. 2 quality..... ..$4.25@6.00

Solder—

½ & ⅓ guaranteed.....19@19½¢
No. 1..... .....15 @17½¢
Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Concentrated Soldering Flux.
f.o.b. New York.
In barrels, ₩ lb .....4¢
Smaller quantities. ₩ lb.....5¢
Eureka Soldering Flux—Triple Strength.
In barrels, ₩ lb ..... 3 ¢
Smaller quantities, ₩ lb .....3½¢
Eureka Soldering Flux—Extra Concentrated.
In barrels, ₩ lb..... ....4½¢
Smaller quantities, ₩ lb .....5 ¢
Eureka Soldering Flux—Crystal.
In 100-lb cases, ₩ lb .....7¢
Gedney's Soldering Fluid.
In carboys or barrels, ₩ lb.....2¢
$1.50 for carboy or barrel; money refunded when returned.
Lennox Soldering Fluid.
In barrels, ₩ lb.....2¢
In carboys. ₩ lb .....3¢
Perfection Soldering Flux.
No charge for package.
Bbls. about 500 lb, ₩ lb.....3¢
½ bbls., about 300 lb, ₩ lb.....3½¢
Kegs, about 110 lb, ₩ lb..... .....3½¢
Kegs about 55 lb, ₩ lb..... .....4¢
Yager's Soldering Salts.
1 lb bottles each.....60%
5 lb bottles, ₩ lb 40%

Soldering Coppers—

Per lb..... ....22@24¢

Spelter—

Western Spelter.. .....4.45@4½¢

Spiral Pipe—See *Conductors.*

Stove Pipe Elbows—See *Elbows, Stove Pipe.*

Stove Trucks—See *Trucks, Stove*

Strainers, Conductor—

Galvanized..... . . ..50%

Tin Pigs and Bars—

Banca, pigs. ₩ lb..... .....28¼@29 ¢
Straits, pigs, ₩ lb ..... 28 @28¾¢
Straits, in bars, ₩ lb..... .....29½@29¾¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.
Callaud Grade:
IC, 14 x 20..... ....$7.25
IX, 14 x 20.... . ..... 8.75
IXX, 14 x 20.....10.00
IXXX, 14 x 20.....11.25
IXXXX, 14 x 20.....12.50
Melyn Grade:
IC, 14 x 20..... ..... 6.75
IX, 14 x 20..... ..... 8.25
IXX, 14 x 20..... ..... 9.50
IXXX, 14 x 20 ....10.75
IXXXX 14 x 20.... .....12 00
Allaway Grade:
IC, 14 x 20..... .... 5.75
IX, 14 x 20 .... 6 85
IXX, 14 x 20..... .... 7 95
IXXX, 14 x 20 ..... 9.05
IXXXX, 14 x 20. .....10.15

Coke Plates, Bright—

Bessemer Steel, or equal to J. B Grade, full weight } IC, 14 x 20..... ..$5.25
" " IX, 14 x 20..... ..$6.50

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 lb.....	15¢
95 lb.....	20¢
90 lb.....	25¢
85 lb.....	30¢

Terne Plates—

N. B.—The following prices are for IC, 20 x 28, the rate for 14 x 20 being half as much. 1X is usually held at $2 per box advance for 8 to 10 lb coating and $2.50 to $3 00 advance for 15 lb and upward.

About 40 lb coating.....	$16.00
About 30 lb coating.....	15.25
About 20 lb coating.....	13.25
About 15 lb coating.....	11.25
About 8 lb coating.....	10.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)..... $13.50
IXX, 14 x 28..(112 sheets)..... 14.50
IXX, 14 x 31..(112 sheets)..... 16.00

Troughs Eave—See *Eave Trough*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00
Steel Lock Frame, per doz..... 18.00
Daisy Improved pattern, ₩ doz... 18.00

Tubing—

Tin .....50% | Galvanized.....50%
Fittings for do.....40%

Zinc—

600 lb casks ₩ lb..... .....6¾¢
Per lb..... ...7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Fittings—

List of Oct 7, 1899
Cast Iron Fittings, Black and Galvanized, Standard sizes .....60@60&10%
Cast Iron Bushings and Plugs.65&10@70%
Cast Iron Flanges.....65&10@70%
Malleable Iron Fittings .....55@60%
" " Bushings.....65&10@70%
" " Unions..... 65&10@70%
Wrought " Nipples.....65&10@70%
" " Couplings... ..65&10@70%
" " Long Screws...65&10@70%

Cast Iron Soil Pipe—

List Feb. 25, 1001.
2 to 6 inch inclusive.
Standard..... 55&10@60%
Extra Heavy.... .....65&10@70%
All Fittings..... .....70&5@70&10%

Merchant Wrought Iron Pipe—

List Feb. 15, 1900
Random Lengths.

	Black	Galv
⅛ to ¼ inch.....	50&5%	40%
⅜ to 10 inch..... ....60%		40&10&50%
11 and 12 inch	50%	35%

Extra Strong Pipe—

Random Lengths

	Black	Galv.
⅛ to ¼ in.....	45%	30%
⅜ to 2 in.....	45%	30%
2½ to 8 in.....	45%	30%

Valves Cocks, &c.—

Iron Body Valves..... .....65&5@70%
Air Cocks and Radiator Air Cocks..... 70@70&5%
Soldering Unions..... .....70@70&5%
" Nipples .....70@70&5%
Brass Unions (Rough and Finished).. 65&5@70%
Jenkins Bros.':
Iron Body Valves, except Gate Valves 55%
All Iron Valves, except Gate Valves.. 40%
Iron Body Gate Valves. 50%
All Iron Gate Valves... .....35%
Iron Cocks, all Iron.....60&10%
" " with Brass Plugs.....60%
Brass Globe, Angle and Cross Valves.. 65&10@70&5%
" and Angle Valves, hose outlet..... .. 65&10@70%
Brass Garden Hose Valves.65&10@70&5%
" Horizontal, Vertical and Angle Check Valves.....65&10@70%
Brass Safety Valves 55%
" " " Low Pressure ...55%
Brass Radiator Valves ... 65&10@70&5%
" " Jenkins 55%
Brass Jenkins' Globe, Angle, Cross and Corner Valves.....55%
Brass Jenkins' Safety and Check Valves..... ..... 40%
Brass Jenkins' Gate Valves..... 50%
Brass Steam Cocks .....65&5@70%
" Gas Meter and Union Meter Cocks.....65&5@70%
Brass Fittings, Rough.....65&5@70%
" " Finished.....65&5@70%
" Bushings . .....65&5@70%

Plumbers' Brass Work—

List of December 7, 1896.
Ground Key Work:
Rough Bibs and Stops.....65@65&10%
Finished Bibs..... ...60&10@65%
Rough Stop and Stop and Waste Cocks..... .....70@70&10%
Rough Stop and Stop and Waste Cocks, Patented..... .....60&10@65%
Compression Bibs. .....65@65&10%
" " Flange I..... ..70%
Compression Bath Cocks and Double Bath Cocks ..... 70@70&10%
Compression Basin Cocks ....65@65&10%
Fuller Bibs ..... 70@75%
Fuller Basin Cocks, Nos. 1 to 4....70@75%
Fuller Bath Cocks, No. 4½.....$2.25 net
Chain Stays..... .....60@65%
Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face....₩ set	$1.00	$1.10
Ground Face, ₩ set	$1.05	$1.15

Basin Plugs..... .....40@60&10%
Sink or Bath and Wash Tray Plugs ... 60@60&10%
Basin Clamps.....75@75&5%

Bath Tubs—

Cast Iron Enameled Bath Tubs.
List of March 23, 1900.
Regular Patterns. Guaranteed. Complete Line ....40@10&10%
All High Grade and Special Pattern (except as below)..... .....20%
"Diana" and "Brighton."..... ..20%
Non-guaranteed Brands, complete line 40%
Steel Clad Copper Lined Bath Tubs, list of Feb. 1, 1899..... , 15@50%
Solid Porcelain Bath Tubs.... .....20%
Solid Copper, list of Feb. 1, 1899.....20%

Boilers—

Standard Boilers:
30 gal ... ...65@65&10%
35 and 40 gal.....65&10@65&5%
Other sizes up to 52 gal....50&10@60%
52 gal and above.....50&10@60%
Extra Heavy Boilers:
18 to 52 gal ..... 50&10@60%
53 gal. and above..... .. 40&10@45%

Sinks—

Cast Iron—	Black	Galv.
Sinks, Square, Half Round and Corner	50&5%	50&10@60%
Sink Legs. .. . .50&5%		50&10@60%
Sink Backs	.50&5%	50&10@60%

Wrought Steel—

New Era, Galv'd and Enameled. .. 70&5%
New Era, Painted.....50&10%
L. & G.....50%

Miscellaneous—

Earthenware, List of July 17, 1899....
Basins, Urinals and Hoppers..... 40%
Closet Bowls, Sundries, Washouts and Pedestals 40%
Drawn Lead Traps, List of June 3, 1901.....40&10@50%

ALPHABETICAL LIST OF ADVERTISERS.

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Arcade Mfg. Co..... 24
Armstrong Mfg. Co..... 28
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Asphalt Ready Roofing Co .. 69
Auld & Conger..... 64
Barnhart, C..... 21
Barstow Stove Co..... 76
Beckwith, P. D., Est. of..... 2
Berger Bros. Co.....24&65
Berger, L. D..... 72
Berger Mfg. Co 70
Bergstrom Bros. & Co..... 11
Bertsch & Co..... 74
Bliss, E. W. Co..... 74
Blodgett, G. S. Co..... 23
Boynton Furnace Co..... 6
Brand Stove Co..... 15
Bray, J. & Co..... 65
Bridgeport Crucible Co..... 23
Bridgeport Stove Works..... 28
Brien Heater Co..... 18
Brohard Co..... 24
Brooklyn Metal Ceiling Co.... 66
Bruce & Cook.....69&76
Burton, W. J. & Co..... 71
Butler Steel Furnace Co..... 22
Callahan, Geo. & Co..... 65
Canton Machine & Mfg.Co... 72
Canton Steel Roofing Co..... 71
Carroll, J. B..... 27
Champion Steel Range Co.... 21
Cheney, S. & Son 1
Cincinnati Stamping Co..... 72
Clark, Henry N. Co..... 26
Clark Novelty Co..... 64
Clark, Quien & Morse..... 67
Clason Arch. Metal Works... 64
Clayton & Lambert Mfg. Co.. 29
Clough, R. M..... 75
Colwell Lead Co..... 26
Cooney & Geiger..... 65
Cope, Geo. W 23
Cortright Metal Roofing Co... 71
Crosby Steam Gage & Valve Co..... 1
Crown Ventilator Co..... 65
Curtis & Curtis Co..... 29
Dean Boiler Co..... 21
Detroit Stove Works..... 19
Dighton Furnace Co.....1&16
Dixon, Jos. Crucible Co..... 26
Double Truss Coruice Brake Co 72
Dowman Mfg. Co..... 65
Drake, W. H..... 20
Drouve, G. Co..... 69
Edwards, J. H..... 26
Eller, J. H. & Co..... 71
Energy Elevator Co..... 23
Enterprise Stove Co..... 10
Esterbrook's, R. Sons..... 29
Farnan Brass Works..... 27
Fenn, Geo. E..... 65
Floyd, Wells & Co..... 15
Follansbee Bros. Co..... 1
Forest City F'dry & Mfg. Co.. 20
Foster, F. W Mfg Co..... 27
Friedley & Voshardt..... 70
Frink, I. P..... 76
Front Rank Steel Furnace Co 19
Galt, John & Sons..... 64
Garry Steel & Iron Co..... 69
Garvin Machine Co 72
Genuine Bangor Slate Co..... 64
Globe Ventilator Co..... 65
Gobeille Pattern Co..... 26
Gordon, W. J..... 75
Gorton & Lidgerwood Co..... 1
Graham, Chas Chemical Pottery Wks..... 27
Gray, W. A..... 62
Greene, W. F., Est. of..... 26
Grimm, G. H. & Co..... 1
Gummey, McFarland & Co... 67
Gurney & Co..... 23
Gurney Heater Mfg. Co. 15
Hamlin, G. R..... 63
Harrington & King Perforating Co..... 58
Hart & Cronse Co..... 14
Hessler, H. E. Co..... 25
Hoffman, Geo. W..... 18
Howes, S. M. Co..... 24
Howson & Howson 63
Hungerford, U. T., Brass & Copper Co..... 75
Incandescent Light & Stove Co..... 27
Independent Register Co..... 23
International Correspondence Schools..... 63
International Heater Co..... 3
Janney, Steinmetz & Co..... 65
Jenkins Bros..... 1
Johnson, E. J. & Co..... 61
Joliet Stove Works..10, 15, 17&19
Keene, Geo. C. & Co 75
Kelsey Furnace Co..... 80
Kemp, C. M. Mfg. Co..... 28
Kewanee Boiler Co..... 16
Kieley & Mueller..... 1
Koven, L. O. & Bro..... 26
Lamb & Ritchie..... 28
Landers, Frary & Clark..... 29
Lawrence-Letts Elbow Co.... 17
Lennox Machine Co..... 18
Livermore, H. F..... 29
McClure & Co..... 76
McLain, J. H. Co..... 22
McLeod & Henry Co..... 1
McSherry, Chas..... 73
Magee Furnace Co 1
Marcy Stove Repair Co..... 25
Marlin & Co..... 70
Marston, I. G. & Co..... 24
Mellink Mfg. Co..... 28
Meurer Bros. Co..... 67
Meyer, F. & Bro. Co 17
Michigan Stove Co.....4&5
Millar, Chas. & Son Co..... 76
Miner & Peck Mfg. Co 23
Montross Metal Shingle Co.... 71
Morgan & Co..... 29
Mueller, L. J. F'cc Co..... 14
Munsell, E. & Co..... 22
National Enameling & Stamping Co..... 80
National Pipe Bending Co.... 20
New Haven Novelty Machine Co..... 29
Newton, Wm. M..... 1
New Orleans Rfg. & Metal Works..... 69
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New York Trade School..... 62
Niagara Machine & Tool Wks. 73
Noyes & Nutter Mfg. Co..... 20
O'Halloron & Jacobs..... 64
Ohl, Geo. A. & Co..... 74
Osborn, J. M. & L. A 66
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Peck, Stow & Wilcox Co..... 73
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Reading Stove Works..... 9
Reeves Mfg. Co..... 66
Rhodes, L. E. Co..... 27
Richmond Stove Co..... 11
Ringen Stove Co..... 7
Robinson, J. M. & Co..... 75
Rochester Radiator Co..... 23
Rutland Fire Clay Co..... 26
Sackman, F. A..... 63
Safety Furnace Pipe Co..... 17
Salem Nail Co..... 65
Sanborn, John..... 69
Saunders', D. Sons..... 23
Schaffer, John P..... 22
Schill Bros. Co..... 11
Schneider & Trenkamp Co.... 6
Schratwiesers Metal Lath Works..... 69
Schwab, R. J. & Sons Co..... 16
Schwerdtle Stamp Co..... 63
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Smith, H. B. Co..... 18
Smith & Anthony Co..... 76
Smith & Thayer Co 14
Smith-Warren Co..... 66
Special Notices..... 62
Sperry, D. R. & Co..... 63
Stamford Foundry Co 18
Stanton Heater Co..... 19
Stiles & Parker Press Co..... 74
Stocking, E. B..... 63
Stolz, Frank D..... 20
Stuber & Kuck..... 23
Taylor & Boggis Fdry. Co.... 24
Taylor Co., N. & G..... 76
Townley, H. P..... 62
Trimont Mfg. Co..... 26
Troy Nickel Works..... 25
Tubular Heating & Ventilating Co..... 12
Union Mfg. Co..... 74
Valentine, M. D. & Bro. Co... 25
Van, John, Range Co..... 10
Vance Boiler Works..... 20
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Vedder Pattern Works..... 24
Vogel, William & Bros 64
Vulcan Metal Refining Co.... 62
Vulcan Western Co..... 62
Washburne, E. G. & Co.....65&73
Wayne, Anthony Mfg Co.... 64
Weir Stove Co..... 76
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Eastern Office, 284 Pearl St., NEW YORK. 217 North Union St., CHICAGO, ILLS., U.S.A.

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Ball Cocks
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Black Plates.
American Tin Plate Co., New York.

Boilers, Range.
Koven, L. O. & Bro., 50 Cliff St., N. Y.
Wolff, L. Mfg. Co., Chicago, Ill.

Brass Goods
Farnan Brass Works, Cleveland, O.
Jenkins Bros., 71 John St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Brass Sheets, Rolls, &c.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N.Y.

Burners, Acetylene.
Carroll, J. B., Chicago, Ill.

Can Makers' Tools and Machines.
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.

Castings, Iron.
Cheney, S. & Son, Manlius, N. Y.

Ceilings, Metallic.
Berger Mfg. Co., Canton, O.
Brooklyn Metal Ceiling Co., Brooklyn, N. Y.
Canton Steel Roofing Co., Canton, O.
Dowman Mfg. Co., Atlanta, Ga.
Eller, J. H. & Co., Canton, O.
Friedley & Voshardt, Chicago, Ill.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Cellar Drainers.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Coils.
National Pipe Bending Co., New Haven, Conn.

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Berger Bros. Co., Philadelphia, Pa.
Clark, Quien & Morse, Peoria, Ill.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
McClure & Co., Pittsburgh, Pa.
Marlin & Co., Pittsburgh, Pa.

Conductor Pipe Machines.
Canton Machine & Mfg. Co., Canton, O.

Copper, Roofing and Cornice.
Gumiey, McFarland & Co., Phila., Pa.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N.Y.

Cornice Machinery.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.

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Garry Steel & Iron Co., Cleveland, O.
Marlin & Co., Pittsburgh, Pa.
New Orleans Rfg. & Metal Works, New Orleans, La.

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Cut Offs, Rain Water.
Cooney & Geiger, Indianapolis, Ind.

Damper Clips.
Brohard Co., Phila., Pa.

Dampers.
Arcade Mfg. Co., Freeport, Ill.
Greene, W. F., Est. of, Troy, N. Y.
Howes, S. M. Co., Boston, Mass.
Taylor & Boggis Foundry Co., Cleveland, O.
Troy Nickel Works, Troy, N. Y.

Die Stocks.
Curtis & Curtis Co., Bridgeport, Ct.

Drop Hammers.
Bliss, E. W. Co., Brooklyn, N. Y.

Dumb Waiters.
Energy Elevator Co., Phila., Pa.

Eave Troughs.
Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Co., Canton, O.
Clark, Quien & Morse, Peoria, Ill.
Eller, J. H. & Co., Canton, O.
Marlin & Co., Pittsburgh, Pa.

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Berger Bros. Co., Phila., Pa.
Berger Mfg. Co., Canton, O.

Eave Trough Machines.
Canton Machine & Mfg. Co., Canton, O.
Marlin & Co., Pittsburgh, Pa.

Elbows, Stove Pipe.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
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National Enameling & Stamping Co., 78 Beekman St., N. Y.

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Clark Novelty Co., Rochester, N. Y.
Landers, Frary & Clark, New Britain, Conn.

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Presbrey Stove Lining Co., Taunton, Mass.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Pots.
Clayton & Lambert Mfg. Co., Detroit, Mich.
Wolff, L. Mfg. Co., Chicago, Ill.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

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Stuber & Kuck, Peoria, Ill.

Forming Machines.
Pocock, Oliver, Cincinnati, O

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Perkins, J. L. & Co. Chicago.

Furnace Pipe and Fittings.
International Heater Co., Utica, N. Y.
Meyer, F. & Bro. Co., Peoria, Ill.
Osborn, J. M. & L. A., Cleveland, O.
Safety Furnace Pipe Co., Detroit, Mich.
Schaffer, Jno. P., Pittsburgh Pa.

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Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Brien Heater Co., Hoosick Falls, N. Y.
Butler Steel Furnace Co., Butler, O.
Dean Boiler Co., Boston, Mass.
Dighton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Roversford, Pa.
Forest City Fdry. & Mfg. Co., Cleveland, Ohio.
Front Rank Steel Furnace Co., St. Louis Mo.
Hart & Crouse Co., Utica, N. Y.
Howes, S. M. Co., Boston, Mass.
International Heater Co., Utica, N. Y.
Kelsey Furnace Co., Syracuse, N. Y.
Lennox Machine Co., Marshalltown, Iowa.
Magee Furnace Co., Boston, Mass.
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Mueller, L. J. Furnace Co., Milwaukee, Wis.
Noyes & Nutter Mfg. Co., Bangor, Maine.
Reading Stove Works, Reading, Pa.
Richmond Stove Co., Norwich, Conn.
Schaffer, John P., Pittsburgh, Pa.
Schill Bros., Crestline, O.
Schwab, R. J. & Sons Co., Milwaukee, Wis.
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Stanton Heater Co., Martins Ferry, O.
Tubular Heating and Ventilating Co., Phila., Pa.
Wireton Heating Co., Blue Island, Ill.
Wood & Bishop Co., Bangor, Me.

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Eller, J. H. & Co., Canton, O.
Garry Steel & Iron Co., Cleveland, O.
Gumiey, McFarland & Co., Phila., Pa.
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New York Iron Roofing & Cor. Co., Jersey City, N. J.

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Galt, John & Sons, 253 Broadway, N. Y.
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Johnson, E. J. & Co., 38 Park Row N. Y.
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Clough, R. M., Tolland Conn.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Garvin Machine Co., 257 Spring Street, New York.
Keene, Geo. C. & Co., Cincinnati, O.

SEE ALPHABETICAL INDEX, PAGE 58.

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Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
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Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.

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Taylor, N. & G. Co., Philadelphia, Pa.
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Taylor, N. & G. Co., Philadelphia, Pa.
Wood Co., Alan Philadelphia, Pa.

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Cortright Metal Roofing Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.

Shot.

Colwell Lead Co., 63 Centre St., N. Y.

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Skylights.

Canton Steel Roofing Co., Canton, O.
Drouve, G. Co., Bridgeport, Conn.

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Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

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Clason Arch. Metal Works, Providence, R. I.

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Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
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Howes, S. M. Co., Boston, Mass.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Troy Nickel Works, Troy, N. Y.

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Troy Nickel Works, Troy, N. Y.

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Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass
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Magee Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Portsmouth Stove & Range Co., Portsmouth, O.
Reading Stove Works, Reading, Pa.
Richmond Stove Co., Norwich, Conn.
Ringen Stove Co., St. Louis, Mo.
Schill Bros. Co., Crestline, O.
Schneider & Trenkamp Co., Cleveland, O.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Stamford Foundry Co., Stamford, Ct.
Van, John, Range Co., Cincinnati, O.
Weir Stove Co., Taunton, Mass

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Detroit Stove Works, Detroit, Mich.
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Ringen Stove Co., St. Louis, Mo.

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Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.

Tinners' Trimmings.

Vogel, Wm. & Bros. Brooklyn, N. Y.

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American Tin Plate Co., New York.
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Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

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Gray, W. A., 26 Cortlandt St., N. Y.
Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co., Streator, Ill.

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SEE ALPHABETICAL INDEX, PAGE 58.

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

At once, a strictly first-class PLUMBER: none other need apply; steady position to right party. F. E. Freeman, Glens Falls, N. Y. July 20

Bright, active man to solicit work and take off quantities from plans for metal cornice and skylight concern; give age, experience and salary expected: good permanent position for the right party. "Active," care *The Metal Worker*, New York. July 20

At once, a strictly first-class, sober and reliable PLUMBER and TINNER; one that is also steam fitter preferred; steady work and good wages to the right man; only those thorough and competent need apply. D. W. Bovett, Pittsfield, Mass. July 20

An experienced SALESMAN who knows the trade among builders and contractors in Greater New York. "Experienced," care *The Metal Worker*, New York. July 20

Young man who has a knowledge of the hardware business; a wideawake man will find a good opening with us. Burleson Hardware Company, Suspension Bridge, N. Y. July 20

A young man of good character who has had one or two years' experience in the tin and sheet iron business who wishes to finish his trade. A. Knowles, New Bedford, Mass. July 20

Liberal inducements offered to SALESMAN to sell mica. "Mica," care *The Metal Worker*, New York. July 20

An all around TINNER for jobbing shop in country town; no plumbing; must be sober; state wages for a steady job. R. H. Edsall, Macedon, N. Y. July 20

One good all around workman; state wages expected and give references. Rock Island Hardware Company, Derby Line, Vt. July 20

All round TINSMITH; at once; with references; must be sober and understand bench work and hot air furnace work; write or call at once. M. Carney, Post Office Box 293, Philmont, N. Y. July 20

A reliable man who understands FURNACE, TIN and SHEET IRON WORK thoroughly and is capable to take charge of shop and willing to do anything that comes to hand, in or outside works. J. E. Kuchler, Jacksonville, Fla. July 20

A good TINNER who can do all kinds of job work, slate roofing, &c.; state wages wanted. E. Power, Frankfort, Ky. July 20

A good BLOW PIPE MAN; no others need apply. Savannah Blow Pipe & Exhaust Works, Savannah, Ga. July 20

At once, a good all around PLUMBER and TINNER; to one who does not use tobacco and can do my work will pay $2.50 per day; steady work. Geo. W. Gibney, Pawling, N. Y. July 13

Experienced SUPERINTENDENT; one who is capable of estimating cornice, skylights and hot air furnace work and a first-class designer; state experience and salary wanted. Dowman Mfg. Company, Atlanta, Ga. July 13

A first-class CORNICE MAKER, CUTTER and ESTIMATOR as working foreman in sheet metal, furnace and tin work; one who understands all the branches of the business and not afraid to work; this is a good job for the right man; state age, experience and wages desired; must be temperate. "Working Foreman," care *The Metal Worker*, New York. July 13

Wanted at once, two good TINNERS, one for general outside work and one for cornice work; good wages and steady work, eight hours per day. Geo. Rome & Co., Carnegie, Pa. July 13

Young man of one or two years' experience at tinsmithing who wishes to complete trade; man of intelligence and energy only wanted; state experience. Hoover Bros., Milroy, Pa. July 13

One first-class SLATE ROOFER; one who is up to date and a hustler; wages $3 per day; eight hours' work; steady work year round. A. W. Burdick & Co., Memphis, Tenn. July 13

A good STEAM FITTER and PLUMBER; state wages and experience. A. J. Kennard, Roanoke, Va. July 13

An all around TINNER; in and outside work, roofing, plumbing and furnace work; must be sober; steady work for the right man; state wages. Box 236, Stockton, Ill. July 13

An experienced TINNER with some knowledge of slating. I. J. Dickson, Washington, Pa. July 13

A steady, sober TINNER, good for all kinds of job work in a town of 1800; steady job for the right man. B. S. Magill & Son, Tidioute, Pa. July 13

A TINSMITH who understands hot water heating to work in a city of 15,000 near Boston; man must be less than 40 years old, strictly temperate and active; steady job to right man; send references where worked five years or more and state wages wanted. W. H. Hill, 36 Union street, Boston, Mass. July 13

An all around TINNER; one that is used to general repair work, gutters, spouting, &c.; steady job for the right man. Grant Hardware Company, 529 Hampshire street, Quincy, Ill. July 13

SITUATIONS WANTED.

By a first-class CORNICE MAKER and CUTTER. Adolph Klein, 242 East Tenth street, New York. July 20

By a first-class STOVE PATTERN MAKER, CARVER and DESIGNER with 25 years' experience; thoroughly understands the business in all details; also capable in executing the latest style of heavy artistic stove ornamentation; position only in stove works. "Competent, 720," care *The Metal Worker*, New York. July 20

In machine, steam fitting, electric or tin shop, on milling machine, drill press, tapping, assembling, switches or soldering; over 20 years' experience; wages $8. "J. M. T.," care Ross, 301 Sixth street, Brooklyn, N. Y. July 20

By an experienced SALESMAN, a position with some good house; have had 15 years' experience in hardware, tinware, stoves and house furnishing goods; can speak German and English. "German-American," care *The Metal Worker*, New York. July 20

By a first-class PLUMBER and FITTER; willing to work city or country; steady and reliable. J. Abrams, Box 75, Hempstead, N. Y. July 20

By a first-class all around TIN and SHEET IRON WORKER; 14 years' experience in all branches; estimate from patterns or drawings, erect new work; practical cutter; married man; steady work wanted for one year; city or country; wages moderate. Harry E. Phillips, Freehold, N. J. July 20

By a strictly temperate and reliable STEAM and HOT WATER FITTER, a steady position with a reliable house heating firm; have had 15 years' experience. Frank Pierce, General Delivery, Worcester, Mass. July 20

Boy, 16 years, willing to learn the hardware business; best of references and residing with parents; city only. David Block, 131 East Eighty-sixth street, New York. July 20

By a practical iron foundry FOREMAN of 40 years' practical experience in stove plate and light grade of castings; first-class reference as to ability. "S. G.," Box 140, Glenside, Pa. July 20

First-class PLUMBER; city or country; country preferred. Thomas McCarthy, 1000 Fulton street, Brooklyn, N. Y. July 20

With some wholesale or retail establishment; have had ten years' experience in retail hardware, stoves, implements and tinshop, and am anxious to advance along this line; am 30 years of age, married and of steady habits; best references. Box 74, Anna, Ohio. July 20

By a first-class PATTERN CUTTER and SHEET METAL WORKER; 13 years' experience at blower and exhaust mill work, heating and ventilation; competent to take charge. "Pattern Cutter," care J. Day, 617 North Fifth street, Camden, N. J. July 20

A first-class STEAM and HOT WATER FITTER, TINSMITH and PLUMBER; a good, all around mechanic; can estimate from plans or lay out work without plans; capable in every particular; steady job with a responsible firm. "C.," care "C. M. P.," 300 Union street, Jersey City, N. J. July 20

As FOREMAN and DRAFTSMAN in cornice and sheet metal works, by a first-class mechanic and estimator with long experience; sober and reliable. "Skylights," care *The Metal Worker*, New York. July 20

CORNICE CUTTER; no objection to bench work. "Cornice Cutter," 240 West Thirty-sixth street, New York. July 20

HEATING ENGINEER of 15 years' practical experience; A1 ability; thoroughly competent in estimating and making plans for all kinds of heating plants, steam, hot water and hot air heating and ventilation; will guarantee the successful working of any heating plant that I plan; of good address; man of family and of steady habits; the best of reference furnished. H. M. Hoffman, 265 N. Stanley street, New Britain, Conn. July 20

Ambitious young man with eight years' experience in the wholesale stove trade in New York desires position in house in similar line of trade; has acted as shipping clerk, bookkeeper and has traveled as a salesman; can give reference of habits and ability. "X Piece," care *The Metal Worker*, New York. July 20

By a first-class, all around TIN and SHEET IRON WORKER; 15 years' experience in all branches of trade; capable of estimating; practical draftsman; long experience; strictly sober and honest; married man; steady work wanted for one year, city or country; wages moderate. C. M. Hartwick, Keyport, N. Y. July 20

By a first-class PLUMBER, TINNER, STEAM and GAS FITTER; good reference. Daniel J. McColgan, 78 Henry avenue, Pittsfield, Mass. July 20

PLUMBER and HOT WATER FITTER would like steady position, city or country. W. E. Sullivan, Box 8, Ridgefield, Conn. July 20

As FURNACE SALESMAN; competent to estimate on all furnace work; also understand setting and running pipe. "Furnace," 136 Main street, Danbury, Conn. July 20

By a first-class PLUMBER and FITTER with knowledge of tinning, &c.; city or country: wages moderate; also have helper who wishes a position. A. Kennedy, 110 Christopher street, New York. July 20

A first-class PATTERN FITTER and FILER, thoroughly experienced in stoves, ranges, and furnaces, seeks steady employment; can furnish best of reference. John P. Cotchett, 616 Monroe street, Brooklyn, N. Y. July 20

HEATING ENGINEER and SALESMAN as a soliciting salesman and estimator for high or low pressure work; North or South; can give references. "J. A. C.," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. July 20

A first-class GAS FITTER and PLUMBER in either city or country; has had eight years' experience. "J. M.," care *The Metal Worker*, New York. July 20

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By a TINNER who understands plumbing, steam, hot water and furnace work, piping and gas piping; have had 20 years' experience and can give good reference; wish steady employment. "H. E. S.," Box 505, Warren, R. I. July 20

As PLUMBER and STEAM FITTER in a country shop, by a first-class workman in all branches; 40 years of age; wages moderate for steady position. "B. A.," care *The Metal Worker*, New York. July 20

Journeyman PLUMBER, first-class mechanic, desires work out of town. F. Schaefer, 307 East Eighty-fifth street, New York. July 13

By an ENAMELER as superintendent or foreman; can produce sheet steel or cast iron wares successfully. "Enameler, 711," care *The Metal Worker*, New York. July 13

By young man as HELPER in an up to date plumbing establishment; had two years' experience and would like to finish learning the trade; can furnish best of references as to ability and honesty. Lock Box 171, Cohoes, N. Y. July 13

By a first-class PLUMBER and GAS FITTER; can figure and work from plans; have had 16 years' experience and can furnish best of reference as to honesty and sobriety; $3 a day salary. W. M. Sutton, 241 State street, Hartford, Conn. July 13

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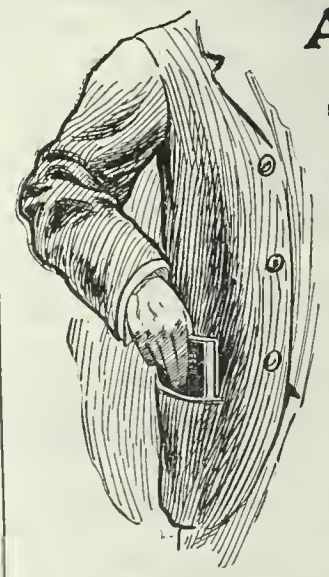

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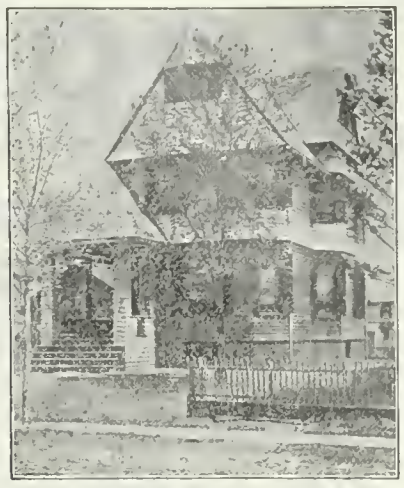

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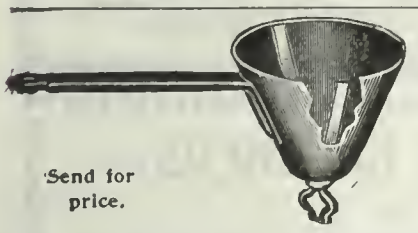

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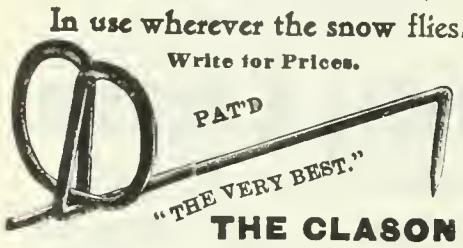

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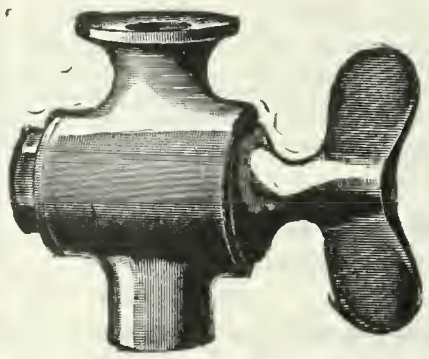

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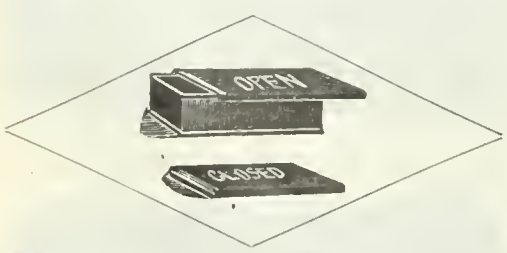

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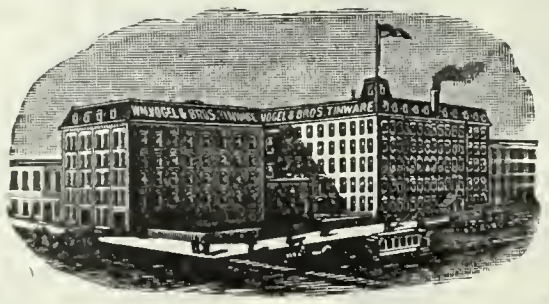

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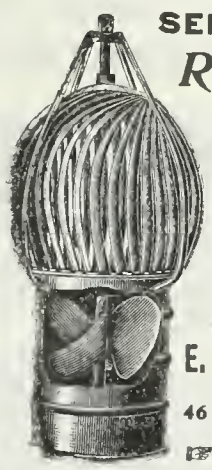

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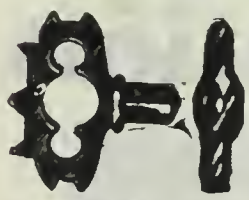

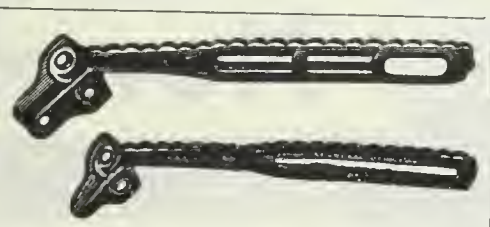

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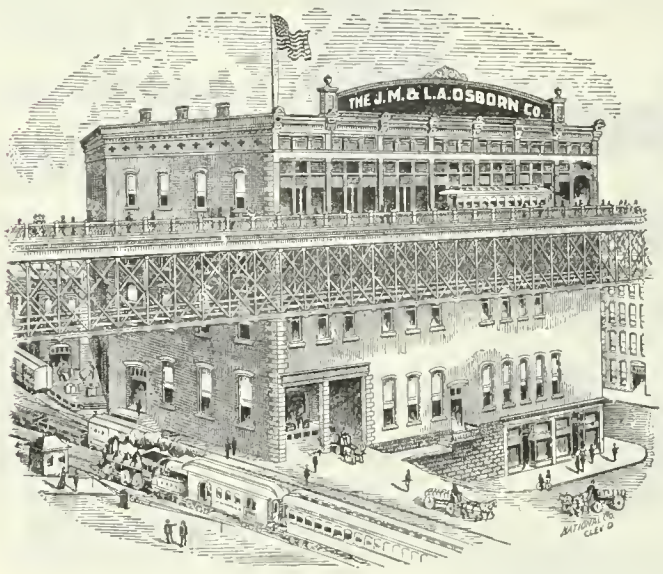

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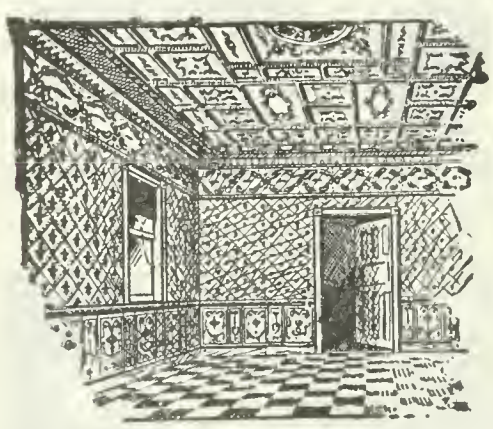

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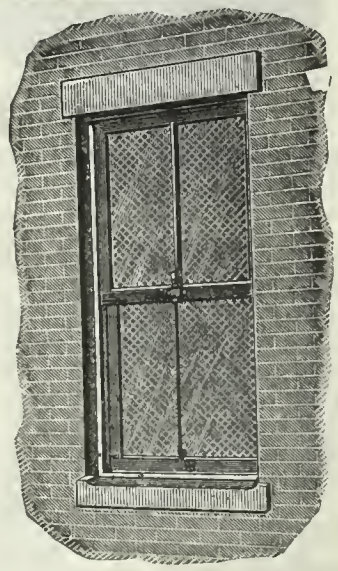

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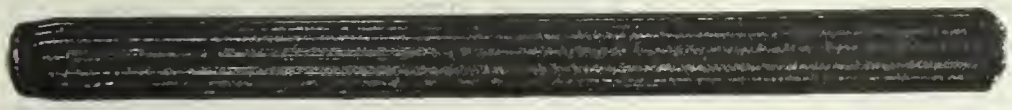

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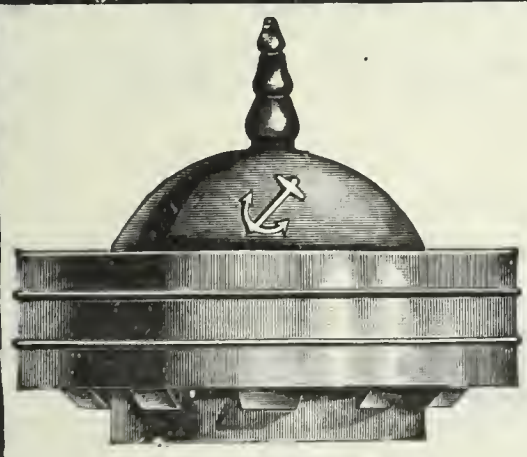

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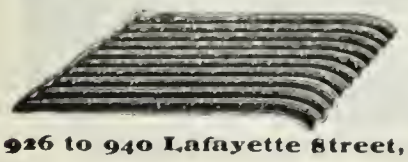

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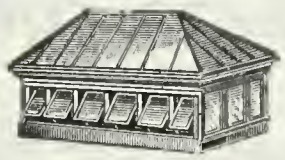

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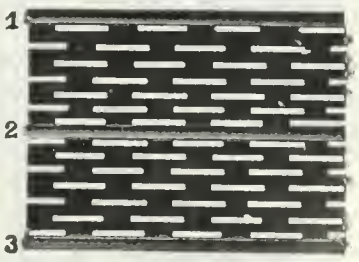

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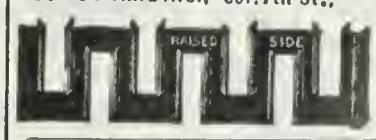

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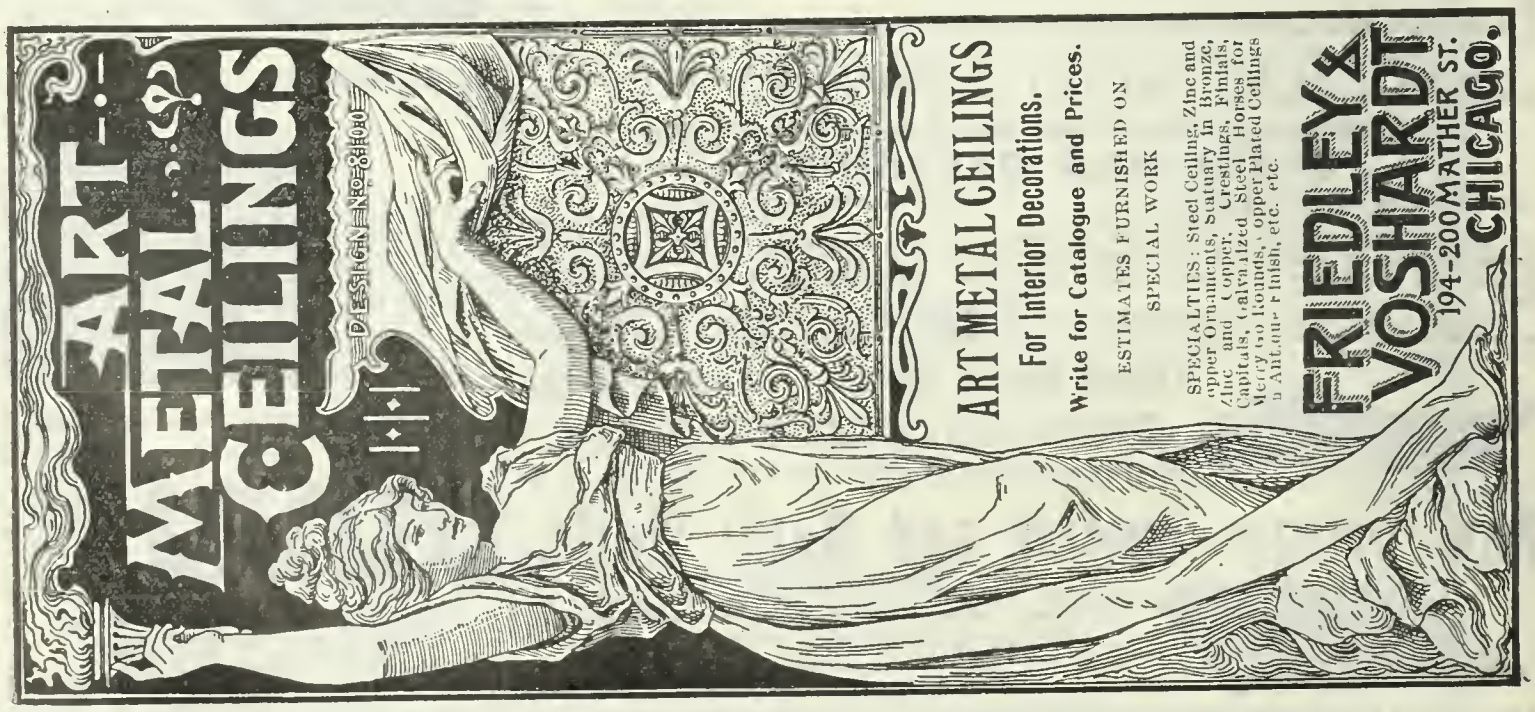
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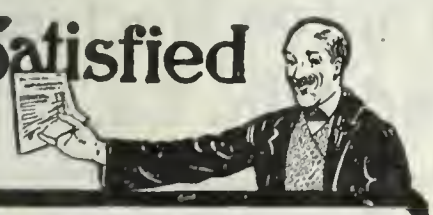

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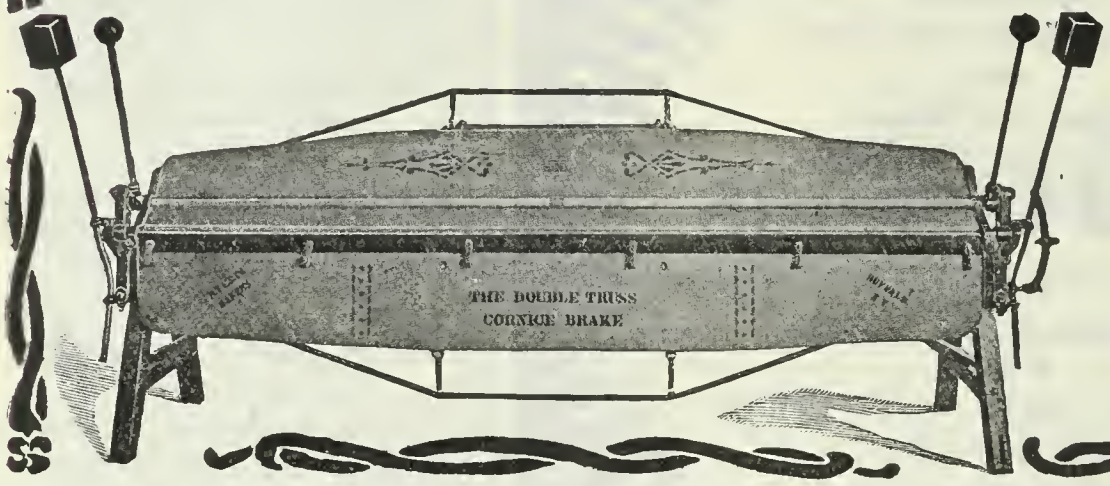

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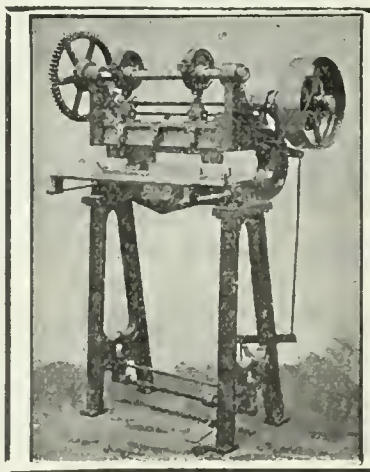

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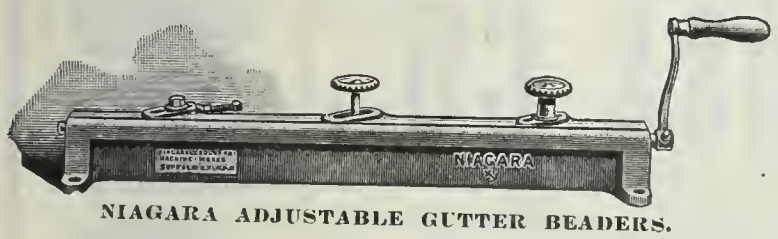

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These machines possess the advantage of being adjustable for rods of various sizes from ⅜ to ¾ inch diameter. After forming the bead the jaws can be opened quickly to facilitate removing the work and rod. They are better adapted than the ordinary Gutter Beader to different thicknesses of material.

Tinsmiths'
Roofers'
Cornice Makers'
} TOOLS.

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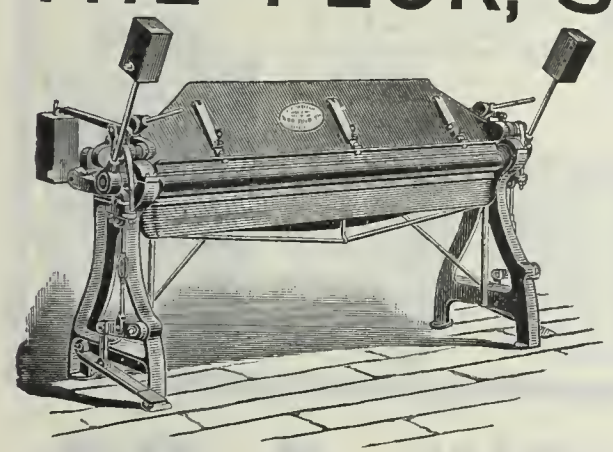
THE PECK, STOW & WILCOX CO.,

New York,
—AND—
Cleveland, Ohio.



HARE'S FOUR LEAF CORNICE BRAKE.

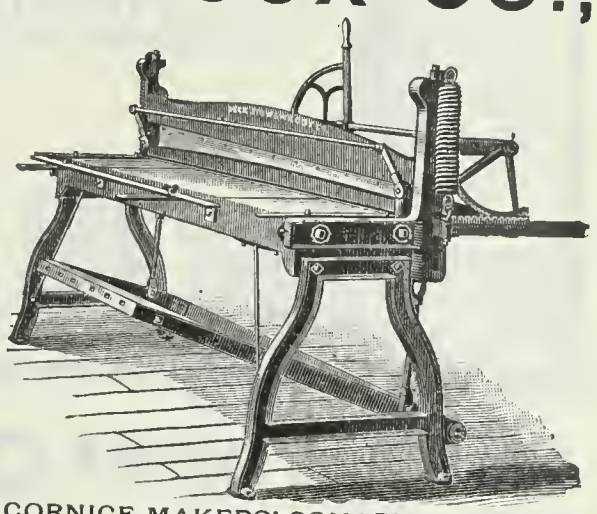
Hundreds sold and never a complaint. Works easily and rapidly. The universal verdict is, IT IS THE BEST IN THE WORLD.

96 inches long.

Tinsmiths' Tools of the Highest Grade.

Our *Improved Eureka Cornice Brake.* Will bend No. 20 iron.

96 inches long.



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With Lever Arc, Automatic Gauge. Will cut No. 22 iron.
97 inches long.

HERCULES SHEARS

make the cutting of sheet metal of heavy gauges an easy task for the mechanic and a profitable operation for the employer. With them a man can cut No. 12 steel, with one hand on the lever, leaving the other hand free to guide the stock while cutting elbows, ties and circles, as small as 8 inch radius; this is done without burring or buckling either piece, thus avoiding hammering and straightening, which add to the cost of the product. They split sheets of any width or length up to No. 12 gauge, cut wire or bar-steel ⅛ inch thick, cut off and mitre angle iron ⅛ inch thick, and do it perfectly.

PRICE, - - $35.00.
Write for Discount.

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PITTSBURG, PA.

Designer and Builder of Labor Saving Metal Working Machinery and Tools.

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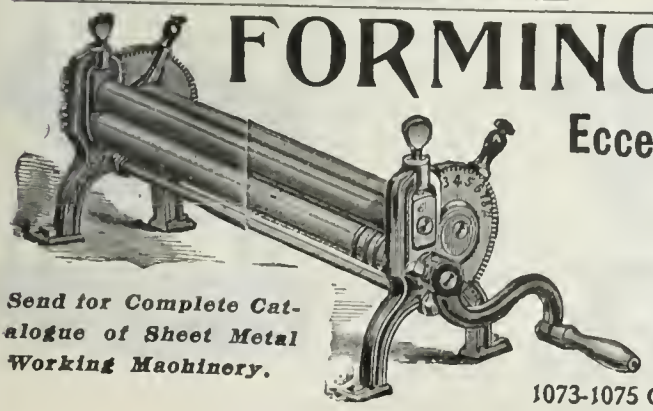
Eccentric Adjustment.



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The advantage in using this machine is the quick adjustment of the back roll by means of graduated eccentrics.

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20th Century Groover for Hand Power. We also make them for Belt Power.

20th CENTURY GROOVER, Handiest out.

Operated from one position. Antomatic knock-out and *Quick Return.* Grooves 22 gauge.
Write for circular. Made by
W. A. WHEELER, Indianapolis, Ind.

COPPER Lightning Rods ...

Absolute Protection from **Lightning** is given by use of our continuous copper conductors

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Telephone, 3125 Cortlandt. 46 Cortlandt St. New York.
Work put up or material furnished.

— HARD TEST.—Mrs. Meddergrass: "The paper says that most o' the Rooshians is ignorant people."

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MAIN OFFICE: 16 ADAMS ST., BROOKLYN, N. Y.

European Headquarters: 12 Ave. De La Grande Armee, Paris, France.

Designers and Builders of Presses, Dies, Shears, Slitters, Double Seamers, Crimpers, etc., etc., for working all kinds of Sheet Metals.

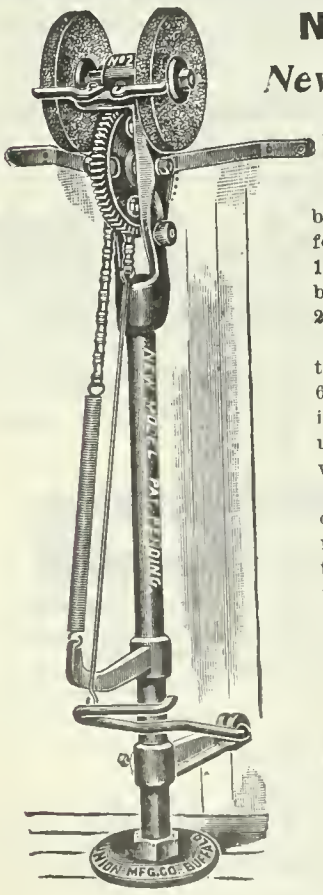
A few of the many articles for which we make the complete machinery for producing are shown in the accompanying cuts.

ALSO OWNERS OF THE STILES & PARKER PRESS CO.

UNION TOOL GRINDER NO. 2.

New Model.

(PAT. PEND. 1900)



This machine embodies all the good features of our No. 1. All gear driven, ball ratchet, speed 2 to 4 thousand.

Furnished with two emery wheels, 6 x ¾ steel shaft, 1 in. tubing for column. Shipping weight 85 lbs.

Plumbers, stove dealers and repair men will find this tool a very good investment.

PRICE $8.00, NET.

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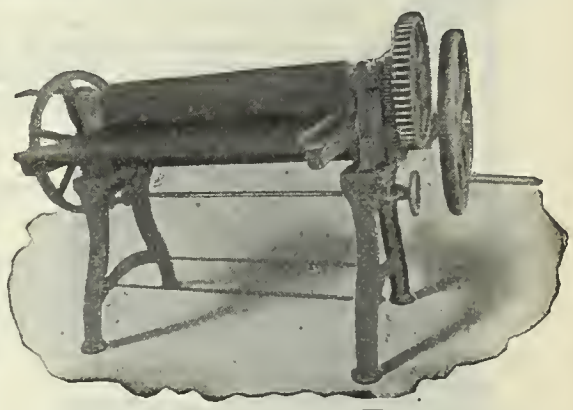
(ALL SIZES.)

Heavy and Light Squaring Shears.

Punches, Presses, Sheet Steel Lath Machines, Drop Presses, Draw Benches, and SPECIAL MACHINERY of all descriptions.



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Of Every Description Furnished on Short Notice.

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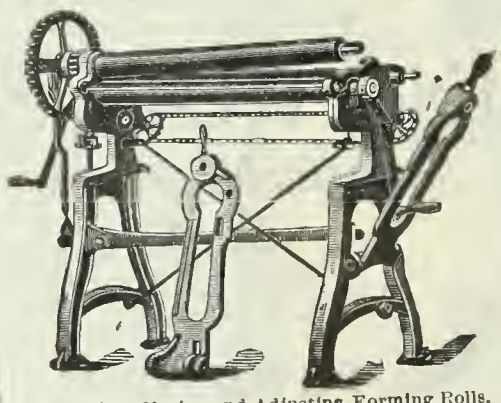

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Practical, Rapid, Cheap.

Always Ready for Prompt Shipment

Write for descriptive circulars and prices.

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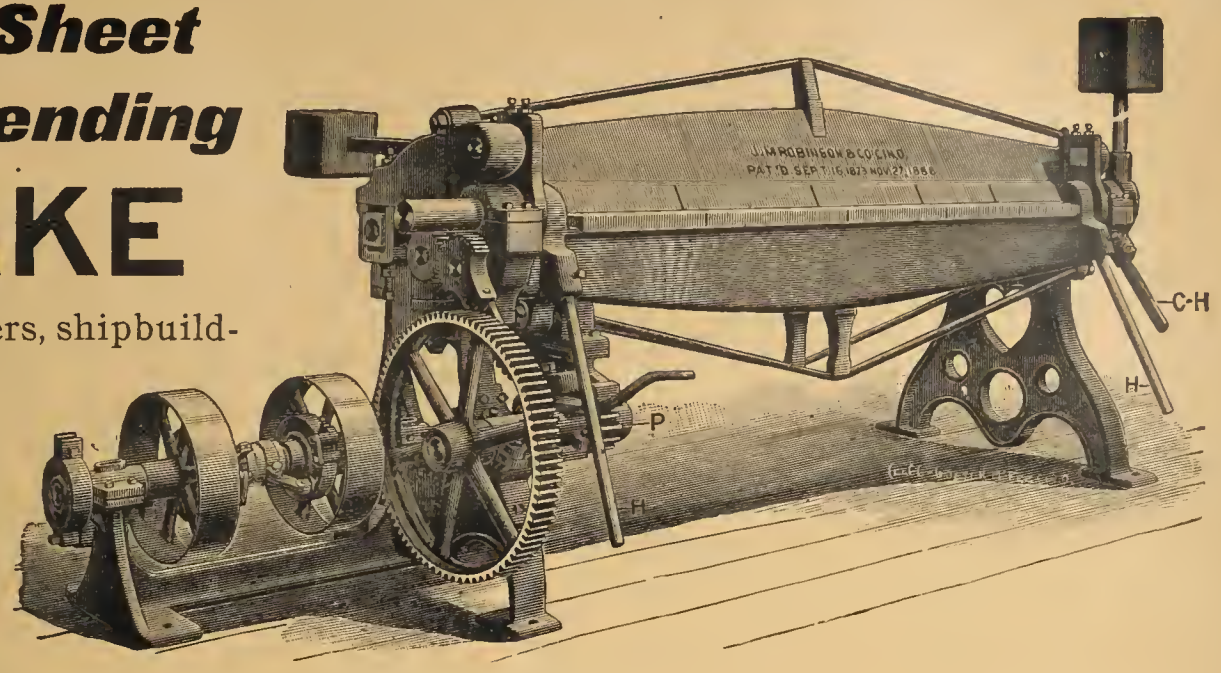
— THE OLD MAN'S SCHEME.—"Harry," said the sweet young thing, "we must elope."

"Goodness!" exclaimed Harry. "Will your father refuse to give his consent."

"Oh! he has already. In fact, he suggested it. He says it will be cheaper."

Heavy Sheet Metal Bending BRAKE



For range makers, shipbuilders, navy yards, and wherever heavy sheets are to be worked or formed. Made in 6 and 8 foot lengths, to bend No. 10 gauge or lighter.

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Outfits for Iron Roofing Establishments a Specialty.

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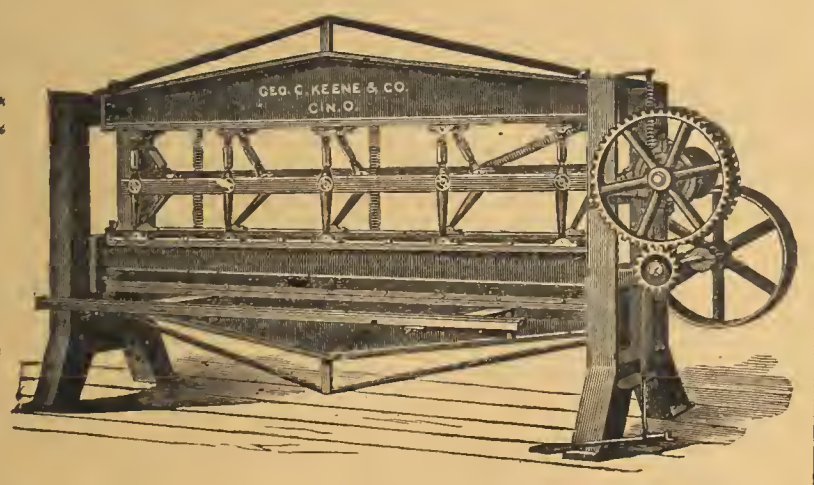
Makers of the KEENE CORNICE BRAKE.



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Complete outfits of Speaking Tubes, Whistles, Pneumatic Bells, &c. A full line of Speaking Tube Hardware constantly on hand. Factory, DeKalb Ave., near Knickerbocker, Brooklyn, L. I.

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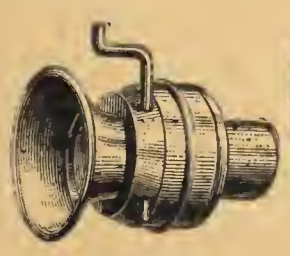

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SEAMLESS BRASS AND COPPER TUBING.

All sizes from 1-8 in. to 9 in. diameter.

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We carry in stock a general line of Brass and Copper in Sheets, Rolls, Rods, Wire, Rivets, Nails, &c.

Our large and well-assorted stock (aggregating over 1,000,000 lbs.) enables us to fill orders promptly.

IMPROVED

Patent Automatic Can Body Double Lock Seaming Machines.

COMBINATION

Presses and Dies, Sheet Metal Tools, &c.

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Adjustable Foot Press.

THIS Press has an adjustment of 1 in. to slide.

Stroke is positive and for many operations such as Punching, Shearing, Stamping, &c., makes a desirable and valuable tool.

Send for circular and prices.

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Dismal Dawson: "Yep. I am the absent-minded beggar, don't ye know."—*Indianapolis Press.*

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"Did she do it?"

"No. She said if she held her hat in her lap she couldn't see the stage herself."—*Tit-Bits.*

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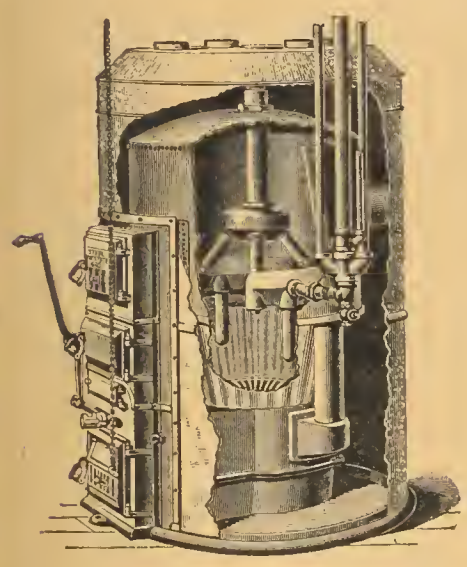

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apparatus provides for the introduction and distribution of fresh warm air and can be secured by using a

BAY STATE COMBINATION HEATER.

Manufactured Only by

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BOSTON, 55 Portland St.,
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The quality of the

"Taylor Old Style"

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N. & G. TAYLOR CO.,

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Lighted by Frink Reflectors.

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TINNERS' SUPPLIES.

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CAST IRON PIPE and SPECIALS for WATER and GAS. Also Flanged Pipe and Fittings, Hydrants, Gates, Pig Lead, etc. CHAS. MILLAR & SON CO., Selling Agents, Utica, N. Y. Manufacturers of Lead Pipe and Plumbers' Materials. Wholesale Eastern Agents Akron Vitrified Sewer Pipe.

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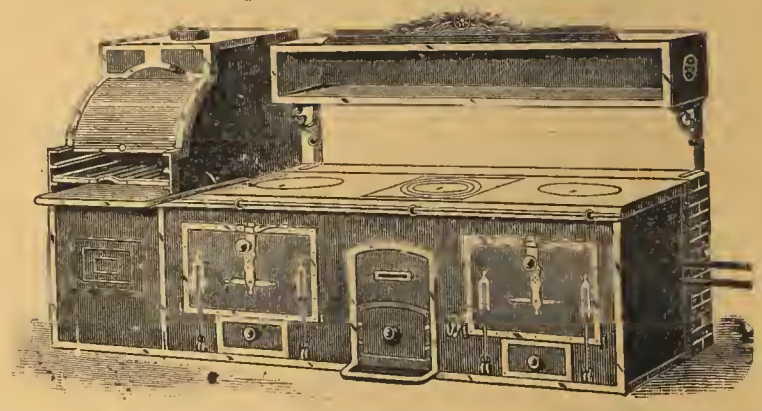

French Ranges, Broilers, Carving Tables, Stock Kettles, Tea and Coffee Sets,

And every requisite for the complete furnishing of any size Hotel or Restaurant Kitchen.

SMITH & ANTHONY COMPANY,

SEND FOR OUR 120 PAGE CATALOGUE. BOSTON.

Do You Know

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Ranges and Heaters.

Weir Stove Company, Foundry at Taunton, Mass. } W. S. Ray Mfg. Co., San Francisco, Cal. Jacob Retterer, Chicago, Ill.

INCREASING DEMAND TELLS THE STORY . . .

McCLURE'S GENUINE CHARCOAL IRON REDIPPED ROOFING TIN

McCLURE & CO.

Manufacturers of Tin Plate,

PITTSBURGH, PA. 211, 213 and 215 Second Ave.
PHILADELPHIA, PA. 115 North 7th Street.

Index to Reading Matter, Page 59.

Index to Advertisements, Pages 61 - 63.

The Metal Worker

A WEEKLY JOURNAL OF THE ROOFING, CORNICE, STOVE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

VOL. LVI. NUMBER 4. NEW YORK AND CHICAGO, JULY 27, 1901. ONE DOLLAR A YEAR. SINGLE COPIES 5 CENTS.

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Fits any Stove.

Plastered in like mortar. Gets as hard as brick.

MY FACE ON EVERY BAG.

Prices—$1.60 per doz 10 lb. bags in 2 doz lots. $1.00 per doz. 6 lb. bags in 3 doz. lots. ONE CENT per lb. in bulk in Barrel

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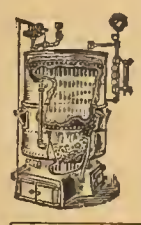

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FOR STEAM AND HOT WATER HEATING.

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THE DIGHTON FURNACE Page 20.

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GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.

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When you know the Round Oak Furnace thoroughly

There will be nothing left for us to do. We can take a holiday.

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HB CHICAGO

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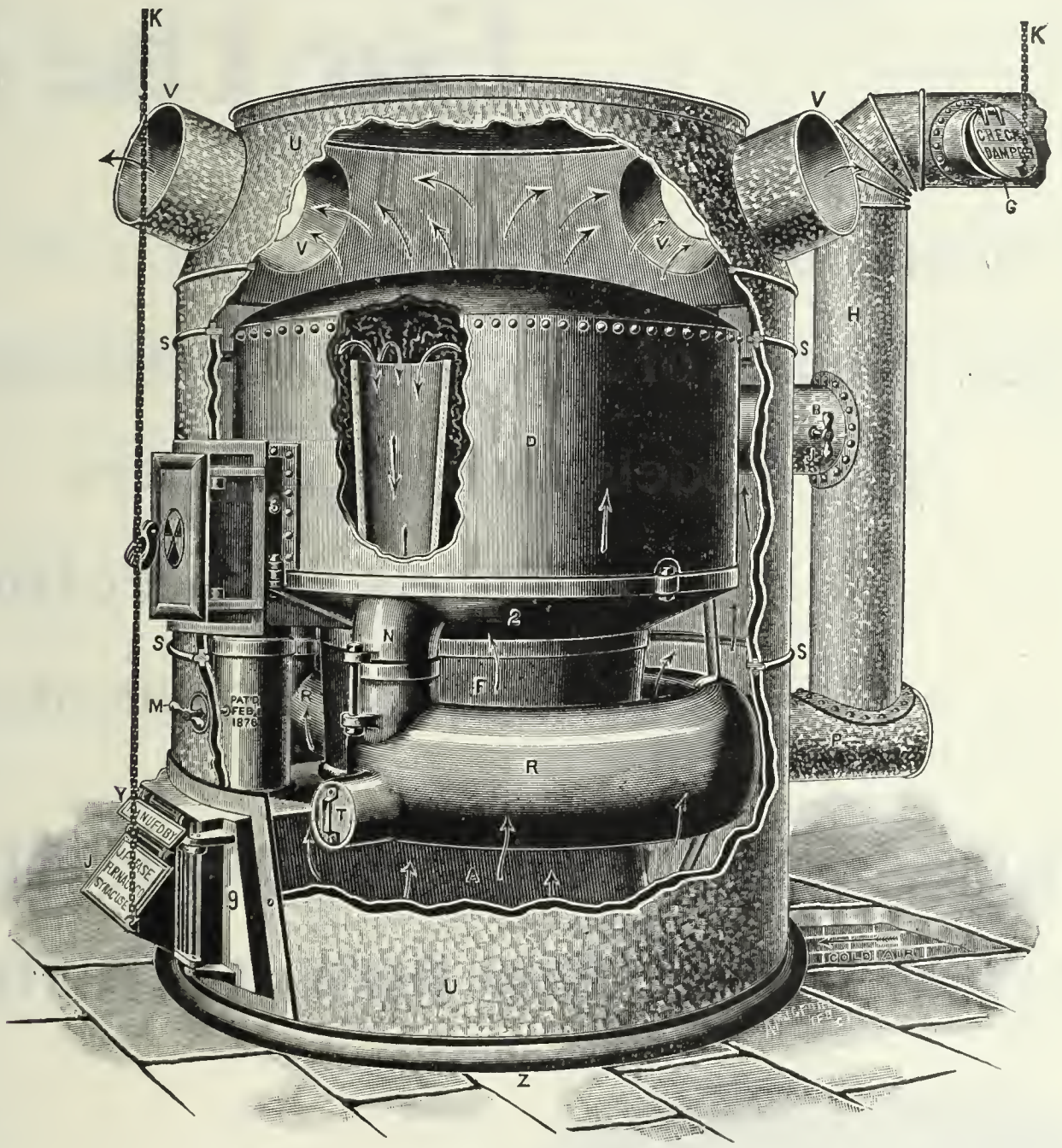
The dealer who sells "Economy" Furnaces builds upon the rock.

The PEASE-ECONOMY
WARM AIR FURNACE
Has proven the corner-stone of more than one steady, lucrative business.



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GARLAND STOVES AND RANGES
"The World's Best"

Nothing to

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New Models of Steel Ranges.

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New Models of Base Burners.

New Models of Sheet Iron Heat

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More New and Desirable Patterns t

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Largest Makers of Stoves

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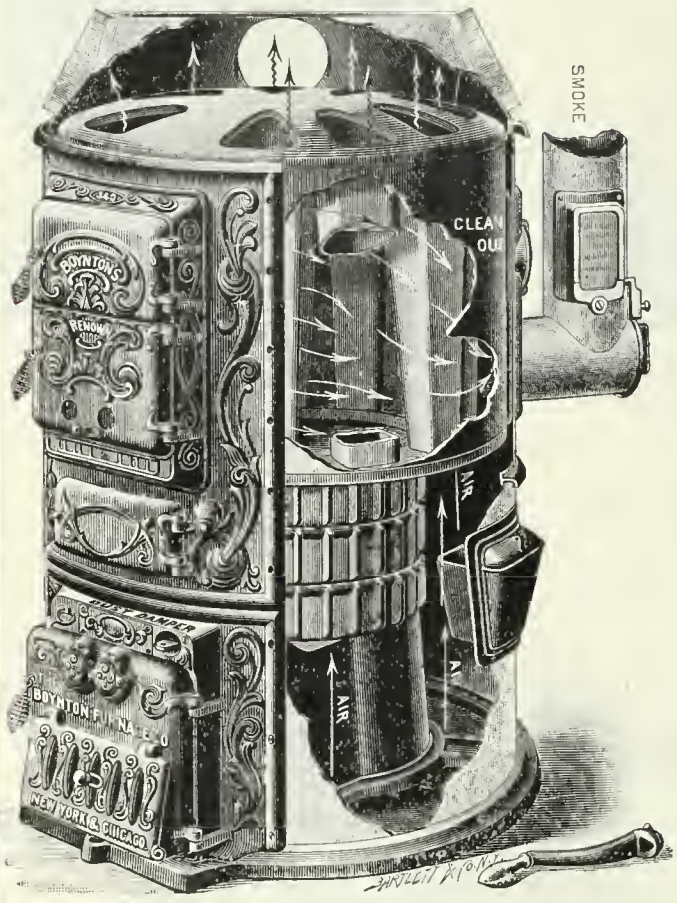
GO. BUFFALO.

First Prize Paris 1900.

BOYNTON'S "RENOWN"

PORTABLE FURNACE



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Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**

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1902 "RELIABLE" STEEL RANGES

Are Perfect in Every Detail.

We have added many valuable improvements for the coming season.

Place no orders until you see our line.

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Made by

THE SCHNEIDER & TRENKAMP CO.,

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Enameled Steel Ranges.

Quick Meal Enameled Steel Ranges

Are what the Dealer needs to **add tone to his sample floor.** Their **appearance attracts** the eyes of his customers and invites **investigation. "Quick Meal" Steel Ranges** have so many **special parts of their own** that it is no trouble for the dealer to convince his customers of their **superiority.** They are easy to sell and please user the when sold. That is why so many of the **best dealers sell "Quick Meal" Steel Ranges.**

Now is the time to place your fall orders.

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FOR HARD COAL.

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Every modern and desirable improvement is embodied in its construction. We believe the careful buyer will acknowledge that there is not a better stove in its class.

Every point has been studied to make it the best; and for ingenious, effective simplicity in construction it stands without a peer.

Best Workmanship, Best Materials, Silver Nickel.

We would be pleased to send our catalogues.

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The Monitor Base Burner.

High Art Series.

It is without doubt the most powerful heater made and its rich and graceful appearance will attract attention at once The novel construction and distinctive features offer every advantage to the dealer who secures the agency. The diving flue is in front, extending entire width of stove, being what is commonly known as a sheet flue, thus the greatest heat is in the front of the stove where it is most needed. The draft is taken in through the bottom, carrying the heavy foul air which settles near the floor. Grate is of the duplex pattern with outer shaking ring. Two large circulating flues are fitted in rear corners of the stove, affording ample circulation for heating evenly the largest room. Our new catalogue will be out of press on the 17th. Secure the agency at once.

The Wm. Resor & Co.,

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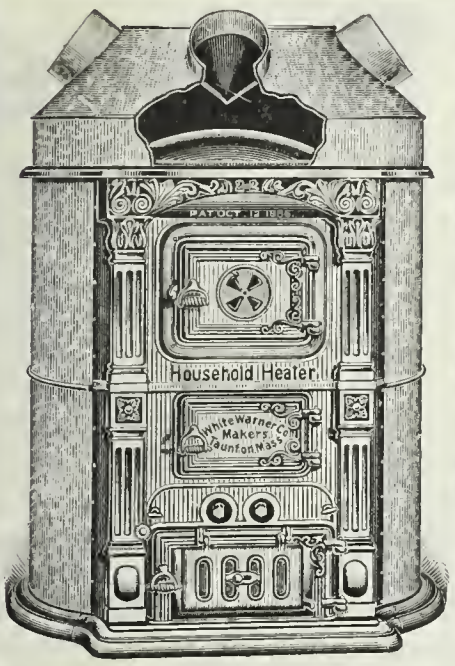
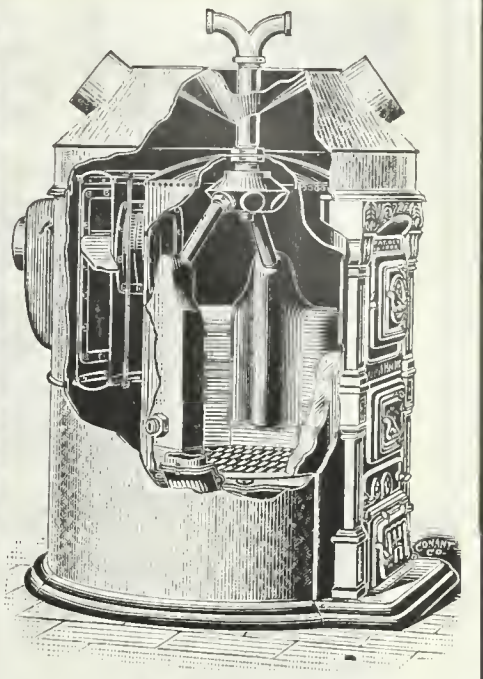


A Good Furnace Business for the man who sells the



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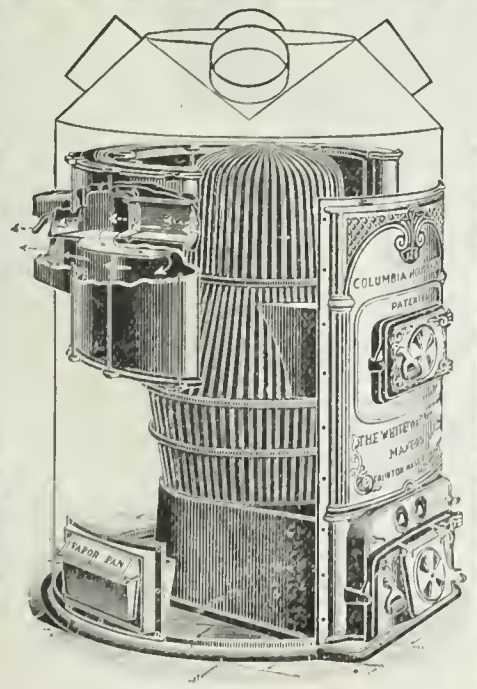
When a customer wants the best heating system possible, The Household, with its brick-lined fire pot, auxiliary horseshoe radiator, superior grate arrangement, and excellent construction, is almost invariably selected.

The Columbia Household

is a new furnace and a popular one—where a perfectly fitted economical heater is desired at a low price. . . .



In addition to the newest features found in cast-pot furnaces, The Columbia Household has ***the patent indirect dratt revertible flue*** of which the White, Warner Co. are sole owners for the New England States.

If you would like to be a Household Furnace Agent write for particulars to . . .

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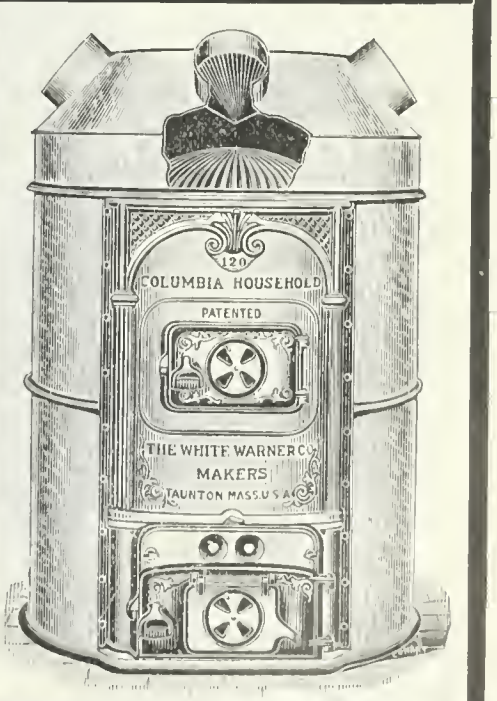


Model Steel Range

For Hard Coal, Soft Coal or Wood.

They are **Models** of all the good things, useful and beautiful, that can be embodied in a modern range. Their popularity, on account of their many good points, has led many imitators to copy them as near as they dare, but as the oven doors, dampers, fire-box and other features are covered by patents, the imitations are still behind in the race, so far as construction and operation are concerned, and we feel confident that a comparison will result in a most favorable impression as to our claim that they are **Models of Beauty** and just the one range above all others that it will pay the dealer to handle. The large and constantly growing trade we enjoy on the **Model Steel Range** has been built up purely on its merits and not through a lot of extravagant "fake" advertising.

Write for prices and discounts.

The Portsmouth Stove & Range Co, Portsmouth, O.

MORLEY BROS., Saginaw, Michigan, Agents for Northwest.

THE BUSIEST MAKERS OF STOVES & RANGES IN THE WORLD

Metal Estate Hot Blast Steel Cook.

The Latest Steel Cook Production on the Market.

THEY ARE JUST RIGHT.

They are made in three sizes of Ovens for Coal or Wood, with Cut or Top Feed.

Full particulars furnished on application. Write for one of our 1901 Catalogues. Just out.

F. & L. KAHN & BROS., Hamilton, O., U. S. A.

SUNSHINE OAK.

A FULL LINE.

Sizes—14 inch to 22 inch.

High Class and First in its Class.

Just the Thing for School House Heating.

Our descriptive circular and price-list will interest you.

MADE AT THE

SUNSHINE STOVE SHOP.

THE READING STOVE WORKS,

ORR, PAINTER & CO.,

Main Office and Foundries:
READING, PA.

Western Foundry: DAYTON, OHIO.

BRANCHES:
153-159 S. Jefferson Street, CHICAGO.
86-90 Canal Street, BOSTON.
64-66 N. 2d Street, PHILADELPHIA.
411 William Street, BUFFALO.

The 1901 Empire Acorn

Popular Grade Hard Coal Base Burner.

Four Sizes, Single Heaters,
11, 31, 51 and 71.

Three Sizes, Double Heaters,
31, 51 and 71.

DUPLEX GRATE—DOUBLE HEATER ATTACHMENT.

Eastern Foundries,
ALBANY, N. Y.

RATHBONE SAR

The Oldest Americ

The ACORN BREAD AD.

Helps the Sale of Acorn Stoves.

SIZES:

3½ inch, Single Column, or 7 inch, Double Column.

USED BY MILLIONS
ACORN STOVES AND RANGES
Trade Mark

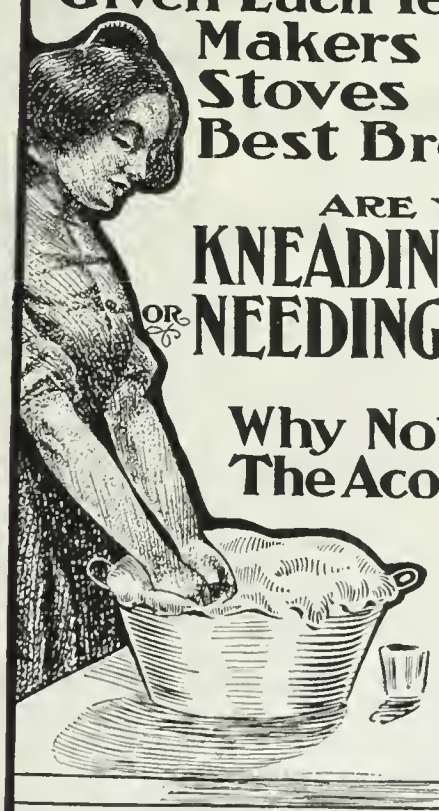
$100
FOR
THREE LOAVES OF BREAD

USED BY MILLIONS
ACORN STOVES AND RANGES
Trade Mark

Given Each Year By The Makers Of Acorn Stoves For The Best Bread.

ARE YOU
KNEADING BREAD?
OR **NEEDING MONEY?**

Why Not Try For The Acorn Prize?



Write or Call on
ANY ACORN AGENT
For a Copy of Rules Governing Contest.

THIS SPACE FOR MERCHANT'S NAME.

Electrotype No. 376. 7 inch, Double Column.

D & COMPANY,

an Stove Makers.

Western Foundries,
AURORA, ILLS.

CATALOGUES SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

STOP! If you're looking for a Steel Range combining all the qualities which go to make an article of that kind desirable—

High Grade Materials and Workmanship,
Correct Construction, Operation Guaranteed,
Modern Design, Latest Improvements,
Low Price—you have it in the

Triumph Eclipse, New "D" Series.

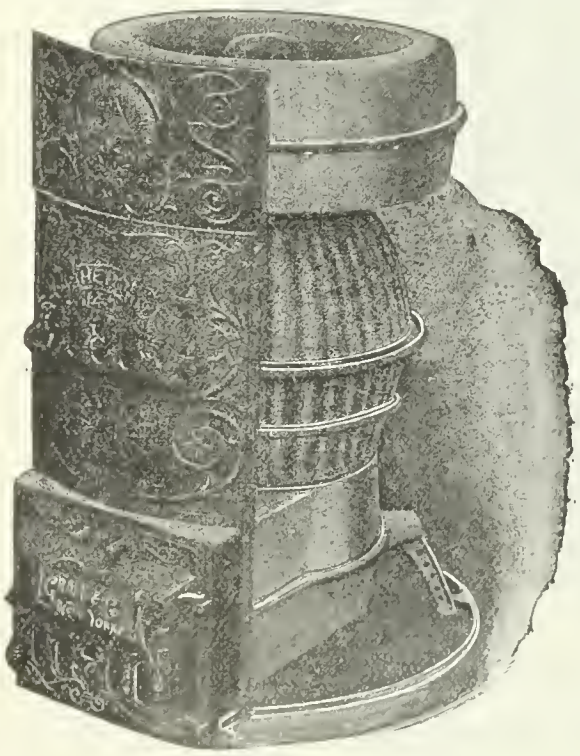
THE BEST LINE OF LOW PRICED RANGES ON THE MARKET.

The Eclipse Stove Co., Mansfield, Ohio.

Repositories at St. Anthony Park, Minn.; Omaha, Neb.; Denver, Col.

NOW is the time to THINK

ABOUT THE... **FALL TRADE.**



HERO FURNACES.
FAULTLESS FURNACES.
COMFORT FURNACES.
RIVAL FURNACES.

We think we can help you to *find the Furnaces* you want.

Our catalogue is at your *service.*

Our variety is worthy of *your careful investigation.*

Our prices are reasonable.

We claim a good deal in the way of *economical, durable* and *effective* constructions, and are prepared to *prove* our claims.

THE GRAFF FURNACE CO.,

208 Water St., NEW YORK.

RICHMOND

RANGES

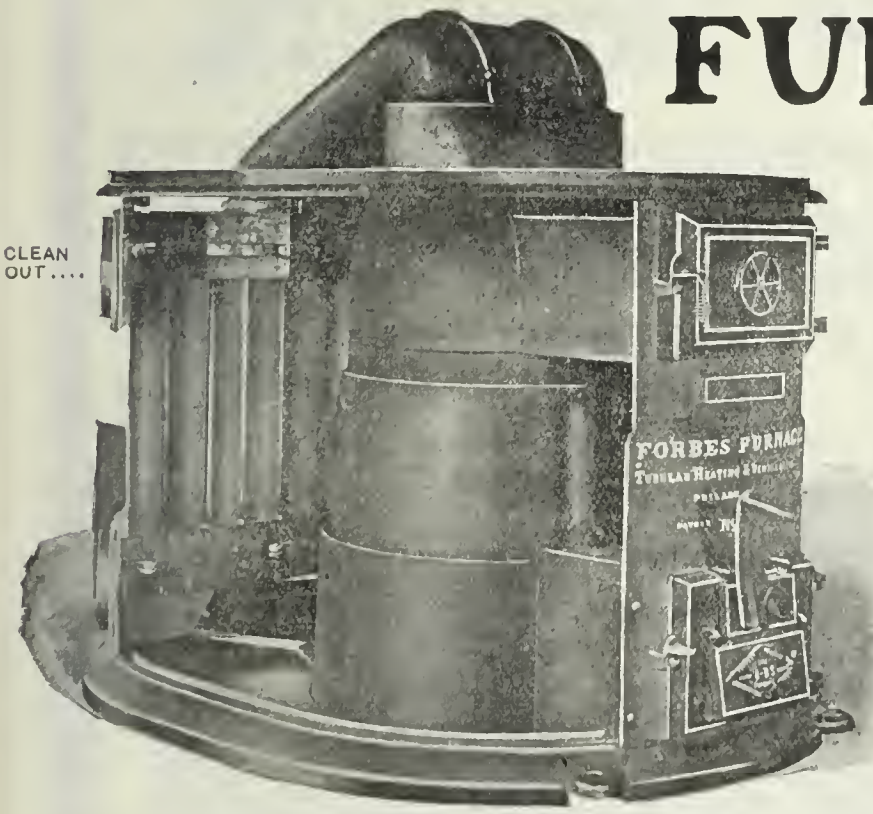
sell on sight
because their many
excellent features appeal
to every housewife.

It is up to the dealer to
get acquainted with
RICHMOND RANGES.

A Catalogue Sent
For the Asking.

THE RICHMOND STOVE CO., - Norwich, Conn.

FORBES (IMPROVED) WARM AIR FURNACE.



ONLY 4 FEET 3 INCHES HIGH.

Compact and Simple Construction.

Aluminum Tubes

IN RADIATOR
ARE RUST PROOF.

Triplex Grate.

PERFECT SHAKING. PERFECT DUMPING.

Each Bar can be separately replaced.

Forbes Furnaces Save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE AND PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

232 Quarry St., PHILADELPHIA, PA.

Moore's Quick Oven Stoves

Bottom Facts--A Straight Tip.

Every oven bottom in MOORE'S STEEL COOK STOVES is guaranteed to be *STRAIGHT* and to keep straight. Our superior method of riveting on the flue strip gives the bottom a backbone, and it can't get away from it.

Compare our way with that used in many of the "just as good" imitations and you will find one of the reasons why the original MOORE'S is the best, and sells the easiest. Some people can be fooled any day, but its *STRAIGHT* goods from the *BOTTOM* up that makes

"THE EASY LINE TO SELL."

JOLIET STOVE WORKS, JOLIET, ILLINOIS.

HOLBROOK, MERRILL & STETSON, San Francisco, Sacramento, Los Angeles.

JEWEL STOVES AND RANGES..

JEWEL STOVES AND RANGES
DETROIT STOVE WORKS
LARGEST STOVE PLANT IN THE WORLD

A Complete, Well Advertised Line;
Low Prices and Good Workmanship.
Please Write for Catalogue.

DETROIT STOVE WORKS.

Detroit - Chicago.

COLUMBIAN OAK.

Columbian STOVES AND RANGES
The KEELEY STOVE Co. COLUMBIA PA.
TRADE MARK

Double Heater and Self Feeder.

The handsomest OAK made, highly ornamental and perfect in every particular.

Anti-Friction Center Draw Grate,

Easily and conveniently applied, through feed door, without removing any bolts.

DUST TIGHT and GAS TIGHT.

Equipped with the best and economical hot blast for perfecting combustion.

No. 23. 13 INCH FIRE POT.
No. 25. 15 INCH FIRE POT.

THE COLUMBIAN LINE

of heating Stoves, Ranges and Furnaces are famous quick and profitable sellers.

Send for Circulars and Price List.

THE KEELEY STOVE CO.,

COLUMBIA, PA. 21 South Charles St., Baltimore, Md.

Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing.

SEND FOR CATALOGUE.

Bergstrom Bros Co.

NEENAH, WIS.

Royal Heaters.

MANUFACTURED BY THE

HART & CROUSE Co.

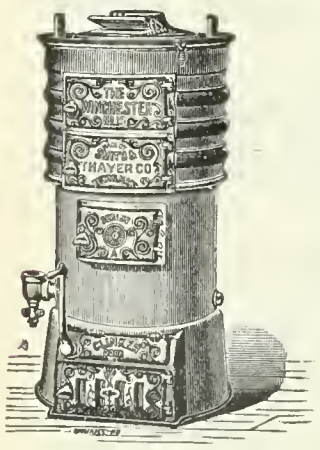
UTICA, N.Y.

ALL THE LEADING LINES OF

STEAM, HOT WATER & HOT AIR,

FOR HEATING ALL CLASSES OF BUILDING.

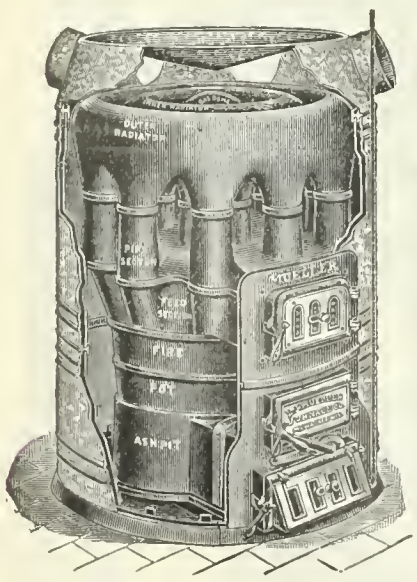
235 WATER ST., N.Y. BRANCHES. 79 LAKE ST., CHICAGO.
COLUMBUS, O. ST. LOUIS.



WINCHESTER

How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.

HEATER.



"MUELLER"

FURNACES and BOILERS

MEAN

Comfort and Economy.

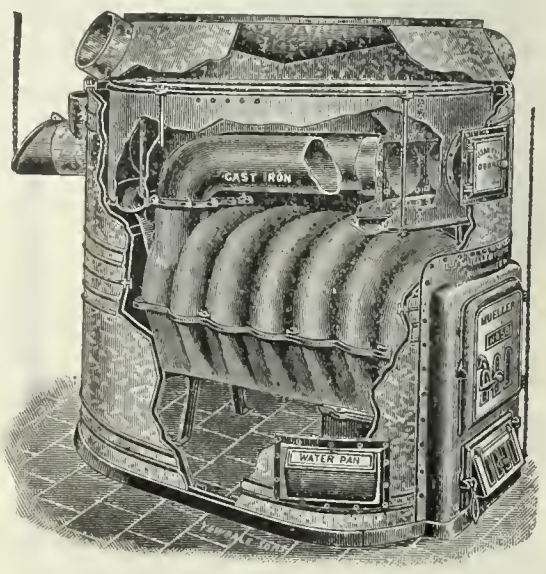
Why not take the Agency of the

BEST and LARGEST LINE?

Write for our 1901 Catalogue and Prices.

GET OUR SPECIAL OFFER ON REGISTERS.

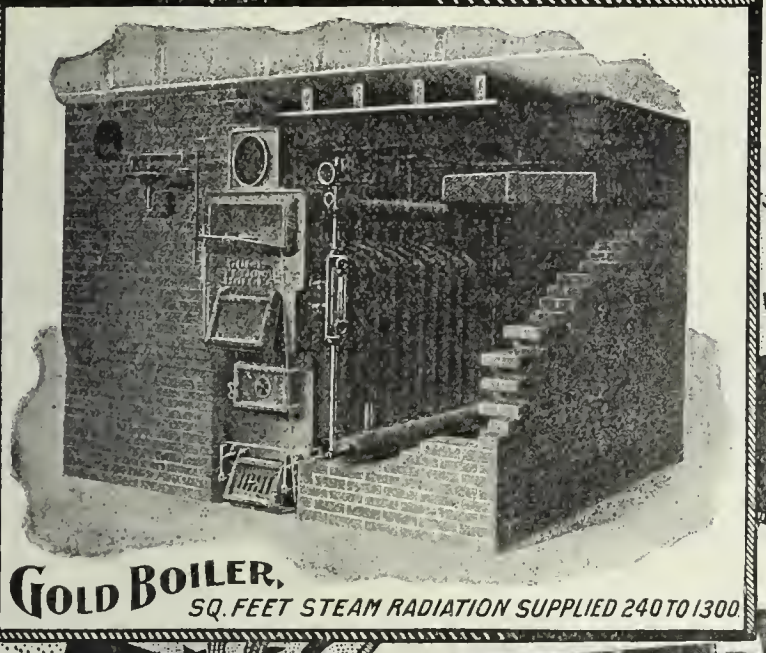
Established 1857.



L. J. MUELLER FURNACE CO., 190 Reed Street, MILWAUKEE, WIS.

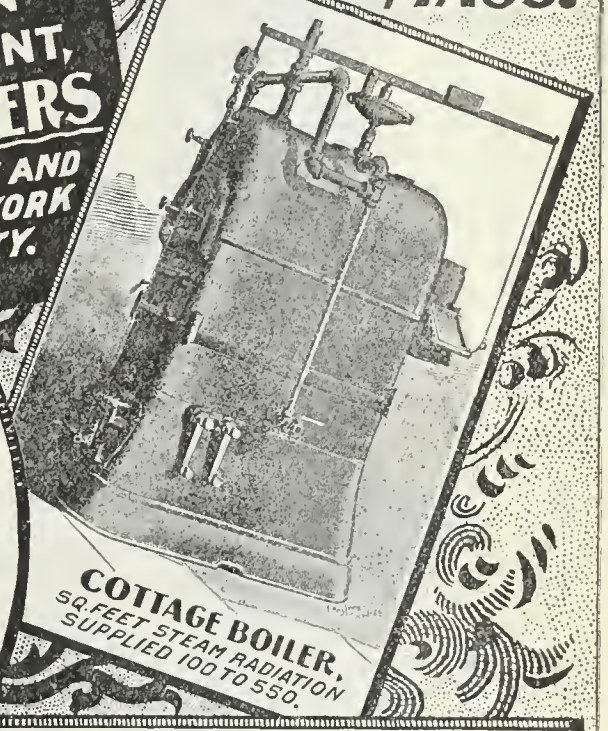
THE H.B. SMITH CO.

WESTFIELD, MASS.



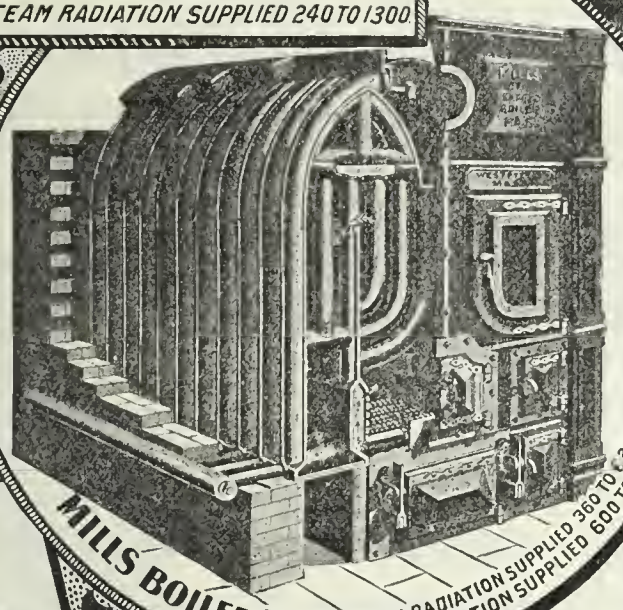
GOLD BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

EUROPEAN AGENT, AUG. EGGERS
BREMEN AND NEW YORK CITY.

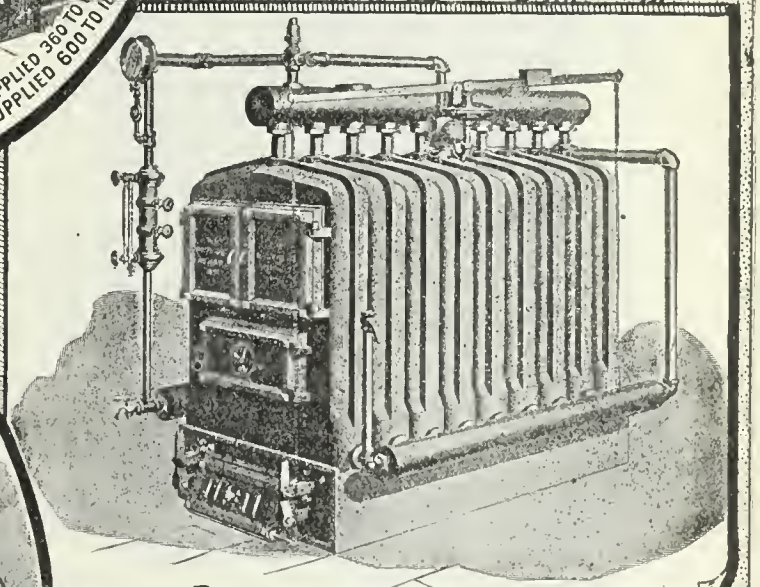


COTTAGE BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 100 TO 550.

PACIFIC COAST AGENTS,
DUGAN BRO'S.
SAN FRANCISCO CAL.

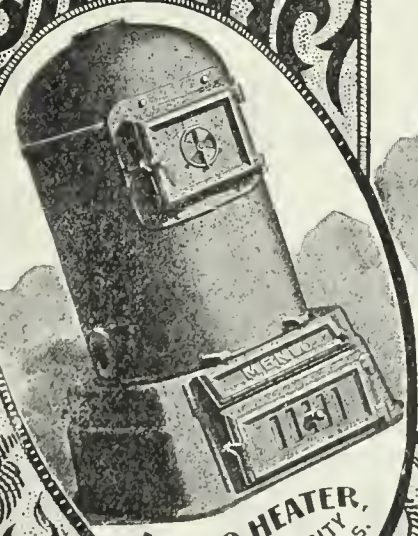


MILLS BOILER, SQ. FEET STEAM RADIATION SUPPLIED 360 TO 2250. SQ. FEET WATER RADIATION SUPPLIED 600 TO 4400.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.

COTTAGE BOILER,
SQ. FEET WATER RADIATION SUPPLIED 150 TO 1000.



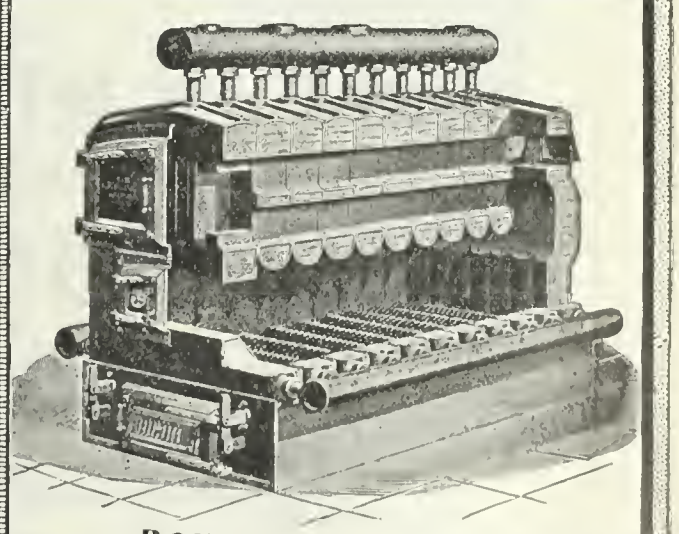
MENLO HEATER,
TANK CAPACITY 100 TO 180 GALLONS.

Western Agents

WESTERN BRASS M'F'G CO.

ST. LOUIS, MO.

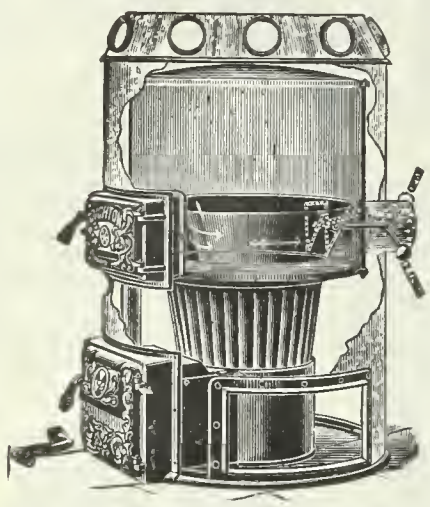
SALESROOMS:
133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.



MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.

If your furnace business isn't quite as profitable as you think it should be, better see WHY.

Some dealers are now selling a good many "**DIGHTONS**" that didn't think there was any money in the Furnace business.



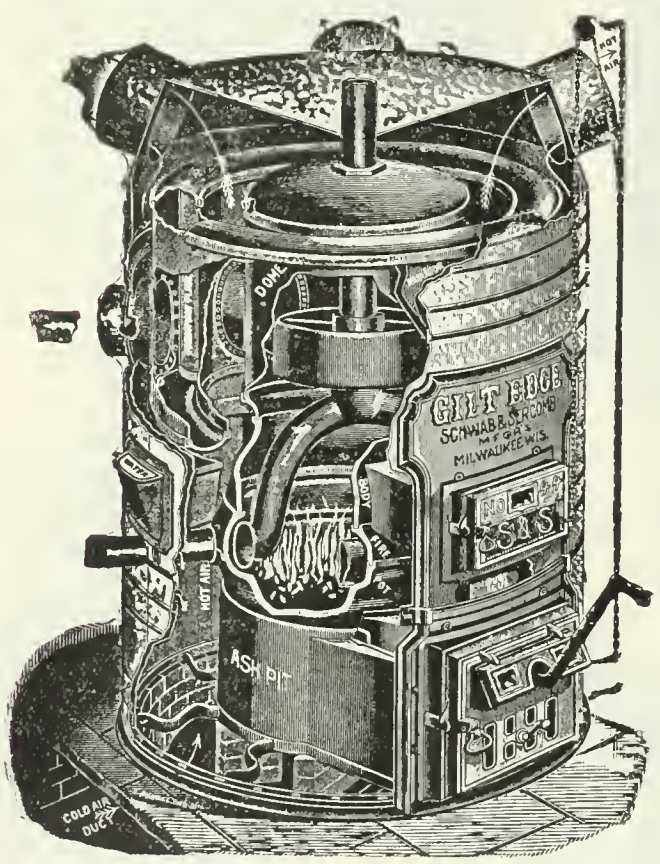
If a dealer figures a Furnace that costs a high price because of an extensively advertised name and don't deliver something that proves more economical in fuel or more durable and satisfactory in every way than the "**DIGHTON**" in the house across the street, this customer naturally wonders why he was it.

The "**DIGHTON**" has advantages over much more expensive Furnaces, especially in the economy of fuel.

If you can prove this by some one who has used a "**DIGHTON,**" you won't waste so much time figuring jobs you don't get.

If you have never sold a "**DIGHTON,**" let us tell you of some one in your vicinity who is using one.

DIGHTON FURNACE CO., Taunton, Mass.



UTILIZED radiating surface, that is economy Sectional fire pots from 1 in. to 2 in. thick and other parts in proportion, that is durability. Positive gas-tight joints, that is necessary to health. These, with all other improvements for ease of management, are combined in the Gilt Edge Furnaces. They are made for all kinds of fuel, and are the very best.

Write for Catalogue and Prices to

R. J. SCHWAB & SONS CO.,

Mfrs.

MILWAUKEE, WIS.

E. E. DUNNING, Mgr. Furnace Dept.

KEEP UP WITH THE PROCESSION.

CONTRACTORS USING OUR BOILERS

Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

If this interests you drop us a line and receive our NEW Catalogues and Prices.

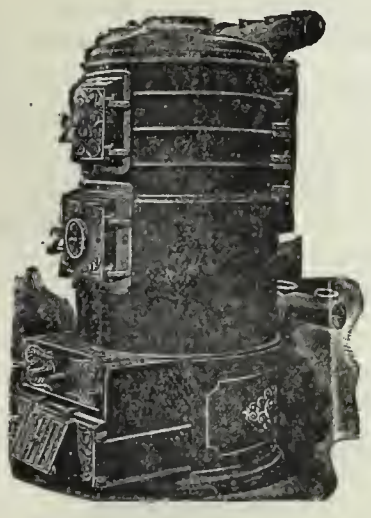
KEWANEE BOILER COMPANY

Home Office and Factory,

Chicago Store, 169 Lake St.

KEWANEE, ILLINOIS.

PERSISTENCY.



It was Josh Billings who declared that "if a man saved only a cent a year, it was merely a question of time when he would become a millionaire." You may smile at the remark, but at the same time you must recognize the element of persistency which it contains.

Now that same element is behind every effort made in behalf of

GURNEY HEATERS

"Bright Idea," "400 Series" and "Doric."

It was persistency that made their present excellence possible. It was persistency that secured their present recognition. It shall be persistency which will broaden their already extensive success.

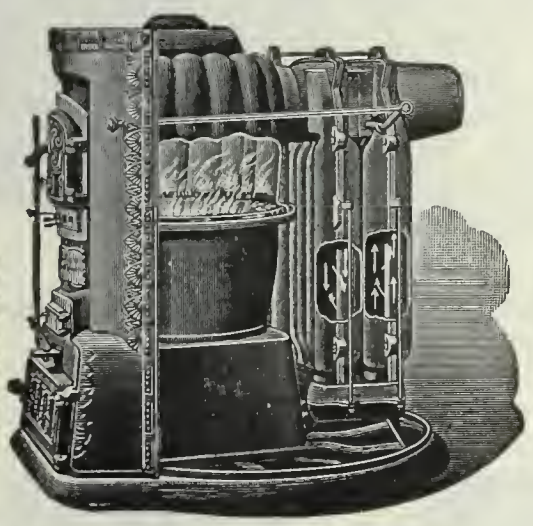
We've a lot of good agents now, but we want more. Better become our agent right away so that these advantages may bring money into your cash drawer.

Our latest trade catalogue, which we will gladly send as soon as you ask for it, contains the whole story. Your address please?

Gurney Heater Mfg. Co., 74 FRANKLIN ST., BOSTON. 111 FIFTH AVE., NEW YORK CITY.

Western Selling Agents, JAS. B. CLOW & SONS, - - - 222 to 224 Lake St., CHICAGO, ILL.

BENGAL FURNACES



Meet All The Requirements

of convenience and economy—are simple in construction and manipulation and please the people.

ALL CAST IRON.

Burn perfectly anthracite or bituminous coal or coke, and

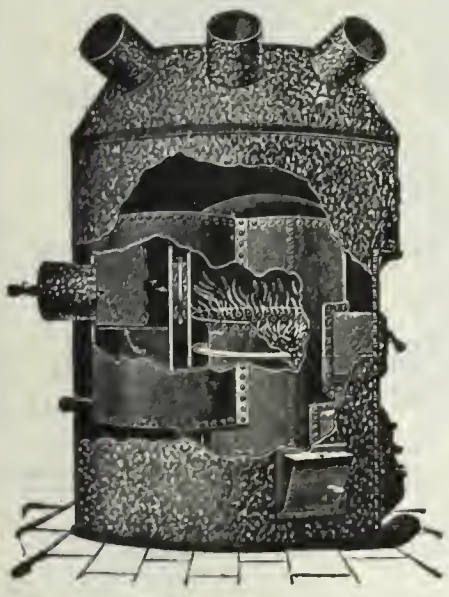
HEAT THE HOUSE—NOT THE CHIMNEY.

Secure a BENGAL AGENCY at once.

WRITE FOR CATALOGUE AND FULL PARTICULARS.

Eastern Selling Agents,
GURNEY & CO.,
Washington, Hanover & Elm Sts.,
Boston, Mass.

FLOYD, WELLS & CO.,
ROYERSFORD, PA.



WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

"THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat producer but a fuel saver."

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

SEND FOR CATALOGUE. PEORIA, ILLS.

"The Handy Furnace Pipe."

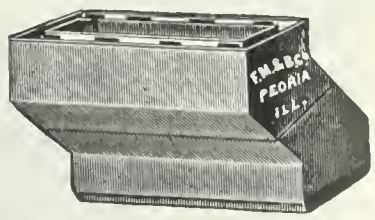
MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,

SEND FOR CATALOGUE. PEORIA, ILLS.



BRAND STOVE CO.

STOVES, RANGES and FURNACES.

SEND FOR CATALOG.

MILWAUKEE, WIS.

HOT WATER AND HOT AIR

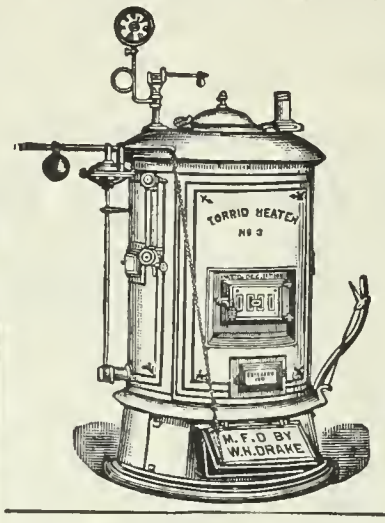
HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

"TORRID HEATER."
FOR STEAM OR HOT WATER.



It is Practical in Design.
It is Safe, Being Tested to 200 Pounds.
It is Easy to Manage and Keep Clean.
It is Durable.
It is Sectional and Easily Handled.
It has No Packed Joints.
It is Self-Feed or Surface Burning.
It has the Torrid Patent Rocking and Dumping Grate.
It is Low in Price.

SEND FOR CATALOGUE.

MANUFACTURED BY

W. H. DRAKE, No. 36 Clinton St., NEWARK, N. J.

Factory: Hackettstown, N. J.

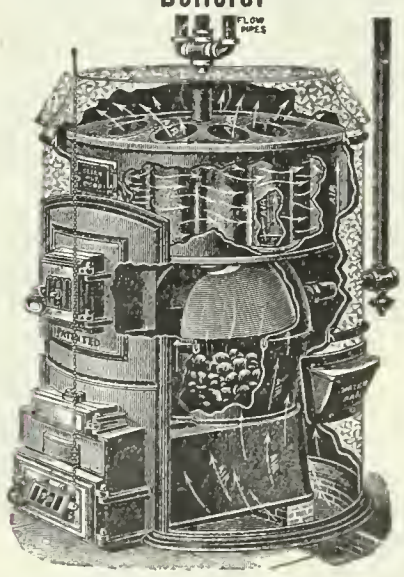
KINEO FURNACES
FOR WOOD.

The Kineo Furnaces are built to secure durability and heating qualities. The smoke enters the radiators on the back and passes entirely around the radiator before entering the chimney, making them the most powerful heaters known. Also manufactured in two sizes with steel radiators.

SEND FOR CIRCULARS.

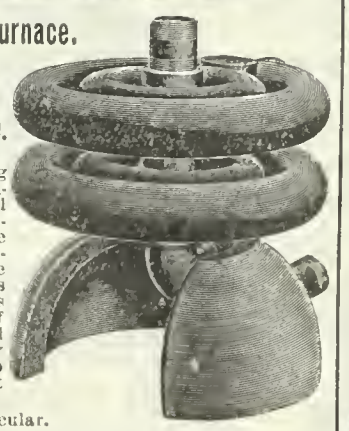
Noyes & Nutter Mfg. Co.,
BANGOR, MAINE.

The Champion Hot Water Combination Boilers.



They Fit Any Furnace.

Base Section with Rings Attached.

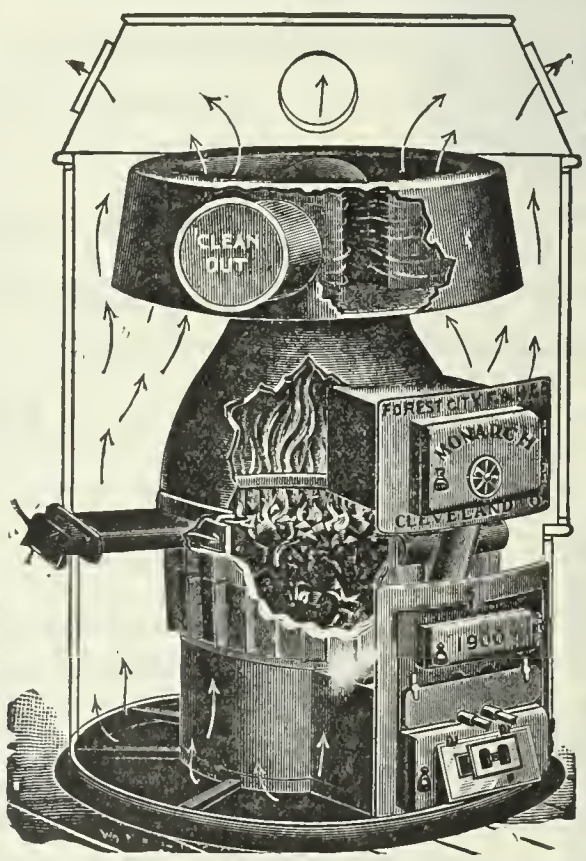


One or more ring sections can be added for additional capacity to be determined by the amount of hot water radiation to be used. These boilers are made in sizes to fit any style of hot air furnace and have a **capacity of from 100 to 660 square feet radiation.**

Write for new circular.

MANUFACTURED BY

FRANK D. STOLZ, 115 Lake St., Chicago, Ill.



MONARCH FURNACES.

All Cast Iron. For Hard and Soft Coal. At Foundry Prices to Large Buyers.

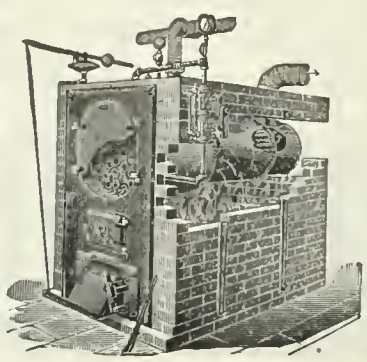
Inquiries Solicited.

OUR NEW CATALOGUE JUST OUT.

The Forest City Foundry and Mfg. Co.

81 Elm Street,
CLEVELAND, OHIO.

Gray Iron Castings to order. High grade only.



Vance Boilers.

The most economical Steam and hot Water Boiler on the market. Write for Catalogue and Price List.

VANCE BOILER WORKS,

373 Atkinson St., Geneva, N. Y.

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES

HOT-AIR AND COMBINATION AIR AND

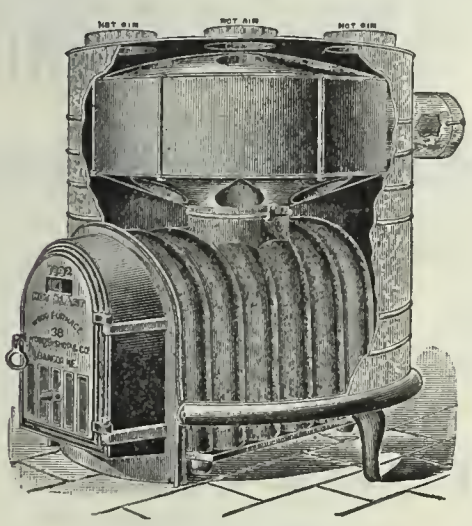
WATER FURNACES

LAUNDRY STOVES CONFECTIONERS' STOVES

CABOOSE RANGES ETC ETC

STAMFORD CONN

WOOD FURNACES.



THE HOT BLAST.

Established 1839. Incorporated 1894.

OUR IMPROVED MONITOR.

The most powerful heater made.

2 SIZES, PORTABLE OR BRICK SET.

No. 38 for 3 ft. wood. No. 50 for 4 ft. wood.

OUR LOW PRICED HOT BLAST.

The most practical, durable heater on the market at anywhere near its cost.

FIRE BOX BODY made in one piece, corrugated, is very heavy and cannot break or warp.

RADIATOR with heavy cast iron heads, heavy plate iron shell and hot air flues, has extra large radiating surface and is self cleaning. Every part of radiating surface is directly exposed to fire, allowing no possibility of creosote in the apparatus. No wood grate. Fuel burns on the ashes in the only practical, economical way.

3 SIZES, PORTABLE OR BRICK SET.

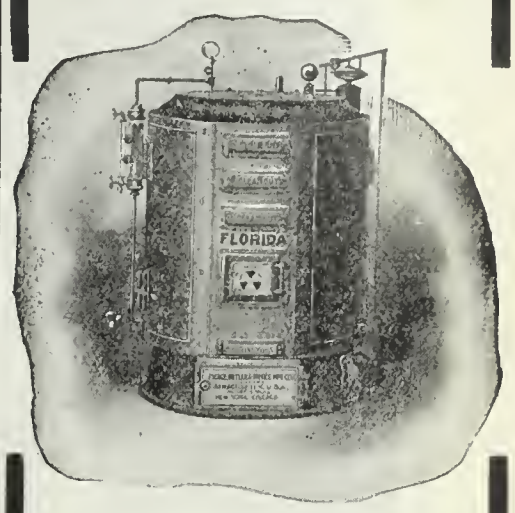
Nos. 36, 42 and 48, for 3, 3½ and 4 ft. wood.

Thousands in use in all sections of the country. Testimonials and full particulars sent on application to the manufacturers.

WOOD & BISHOP CO., BANGOR, MAINE.

Pierce Boilers Perfect Burners

For Steam and Water Heating.



Florida Steam Boiler.

Pierce Steam and Water Boilers are unequaled for economy of fuel consumption, combined with large heating capacity.

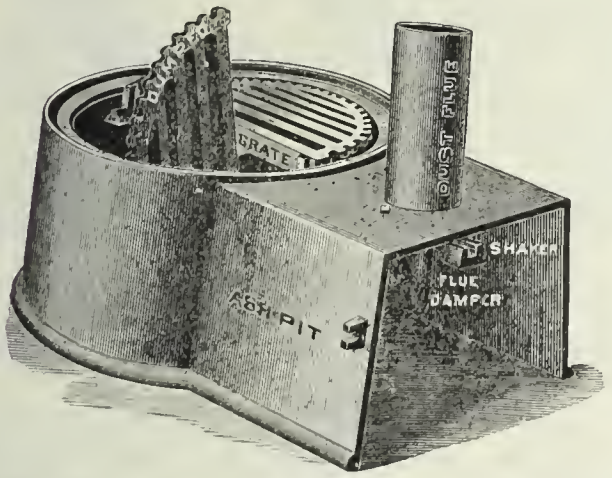
GREATEST VARIETY OF SIZES AND STYLES.

SEND FOR NEW ILLUSTRATED CATALOGUE.

PIERCE, BUTLER & PIERCE MFG. CO., SYRACUSE, N. Y.

NEW YORK.	BOSTON,	PHILADA.,
46-48 E. 20th St.	50 Oliver St.	24 So. 7th St.

THE IMPROVED **Comfort Warm Blast Furnaces.**



FOR SOFT COAL.

MADE IN 5 SIZES—Nos. 1½, 2, 3, 4 and 5.

Are the result of many years' experience, thought and observation. Of the large number of furnaces which we have sold, we do not know of a single instance in which the operation has not been successful and the furnace a source of satisfaction to the buyer, which is the best evidence we can offer to the trade of the value and desirability of our furnaces.

Write for Cat. and Prices.

E. L. BLACK & CO.,
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THE LENNOX

Steel Furnace.

MADE BY

THE LENNOX MACHINE COMPANY,

East Fredrick St., Marshalltown, Iowa.

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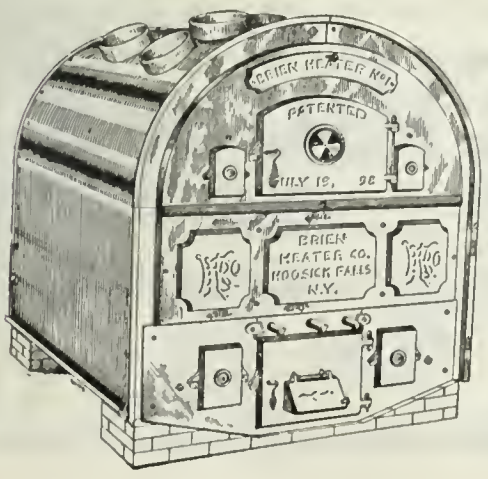

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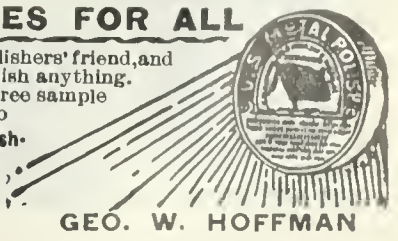
A perfect, all cast WOOD or COAL burner. There is no other Hot Air Furnace as low down as the "BRIEN."

Write for territory, catalog and prices.

BRIEN HEATER CO.,
HOOSICK FALLS, N. Y.

SHINES FOR ALL

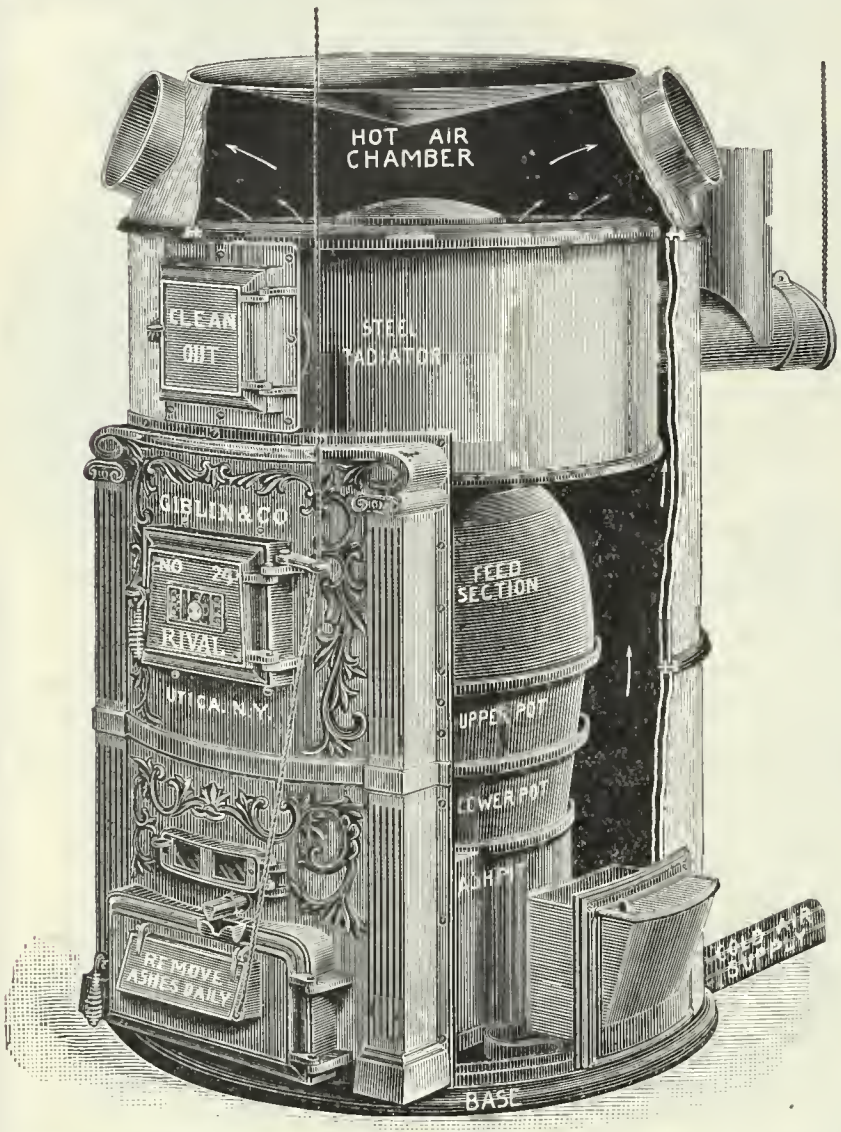
It is the polishers' friend, and will polish anything. Write for free sample to 297 E. Washington St., Ind'p'l's, Ind.



GEO. W. HOFFMAN

FIVE HUNDRED DEALERS

in the United States have sold **RIVAL** furnaces for the past fifteen years and are selling them now. They have allowed other dealers to put in the **CHEAP WORK** and have given their customers



RELIABLE FURNACES

wisely installed and thoroughly efficient in operation. Where **RIVAL** furnaces have been sold the general tone of a furnace business has been advanced to a higher level. Where they have not been sold the furnace business has been in disrepute. Dealers that have had an unsatisfactory business during the past year, have had

MUCH TROUBLE and LITTLE PROFIT

should consider that possibly it is owing to the character of the heaters they sell. We want good dealers to sell our furnaces, install them in a good manner, and good satisfaction will result with increased business at good profit. Our catalog illustrates and describes the line of heaters we make and on application we will quote right prices.

GIBLIN & CO.,
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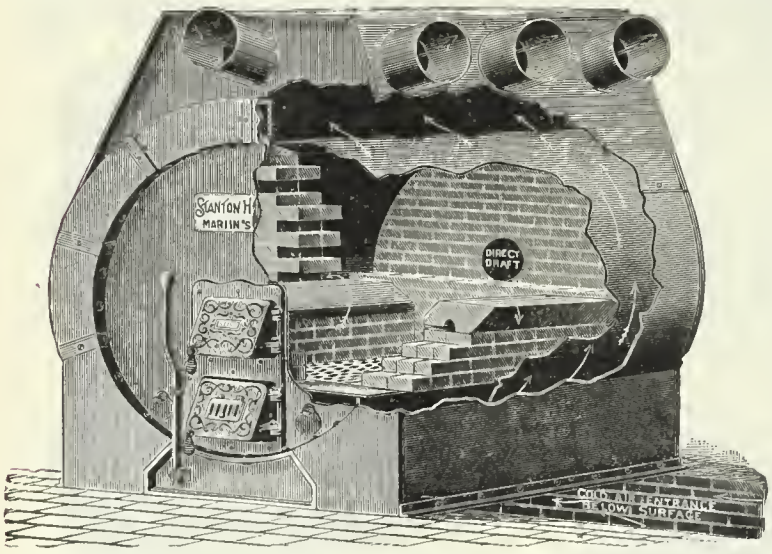
The Stanton Seamless Heater,

PORTABLE CASED.



LOUISVILLE, KY., Apl. 5th, 1901.

THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

Gentlemen :—Your favor of the 3d inst. is received asking our experience with the Stanton Heater which you put in for us during the fall of 1899. In reply we will say that it gives us pleasure to express our entire satisfaction with this Furnace. While we have had no severe weather this winter there have been several quite cold snaps, but our offices have been very comfortably heated, and our coal bill (Pittsburgh coal) has been quite moderate compared with other Heaters we have used.

The satisfaction the Heater has given us can be best expressed by saying that we have not heard the Furnace mentioned once this winter. You can see, therefore, that we have had absolutely no cause for complaint.

Yours very truly
ROBINSON-HUGHES & CO

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THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

See our advertisement next week.

"O.H." ONE PIECE STOVE PIPE Elbows

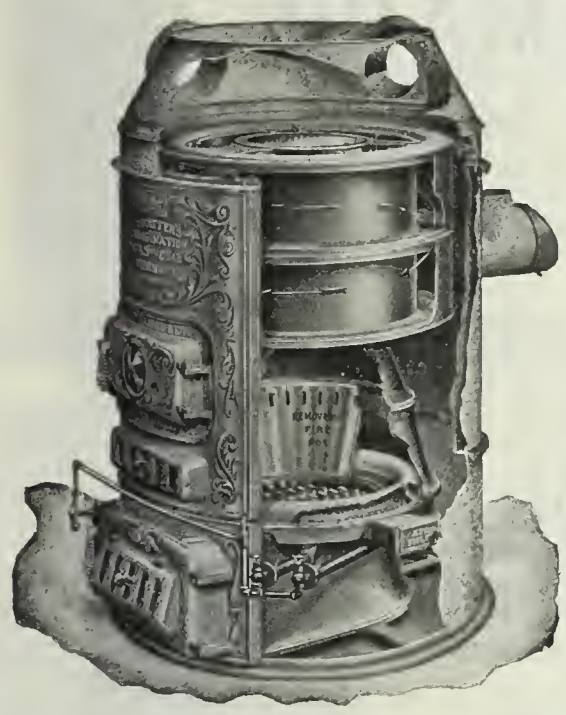
Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM in throat or under side of Elbow.

HANDSOMEST, HEAVIEST AND STRONGEST STOVE PIPE ELBOW MANUFACTURED.

——SOLE MANUFACTURERS,——

THE LAWRENCE-LETTS ELBOW CO., Ltd., - - Waverly, N. Y.

Schaffer's Combination Gas and Coal Furnace.



The Most Economical and Durable Gas Furnace On the Market.

It will heat a house as cheaply with Gas as with Hard Coal, and is so arranged that the change from one fuel to the other can be made in a few minutes, without removing the burner or grate, or disconnecting the gas piping.

Absolutely No Condensation.

For Catalogue and Price List, write to

JOHN P. SCHAFFER,
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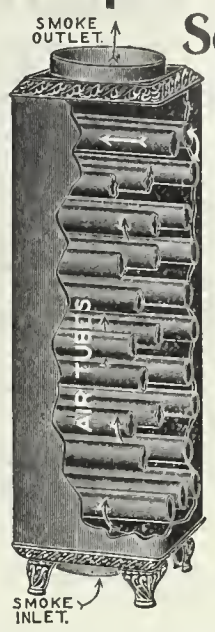
Independent Square Stove Pipe Radiators

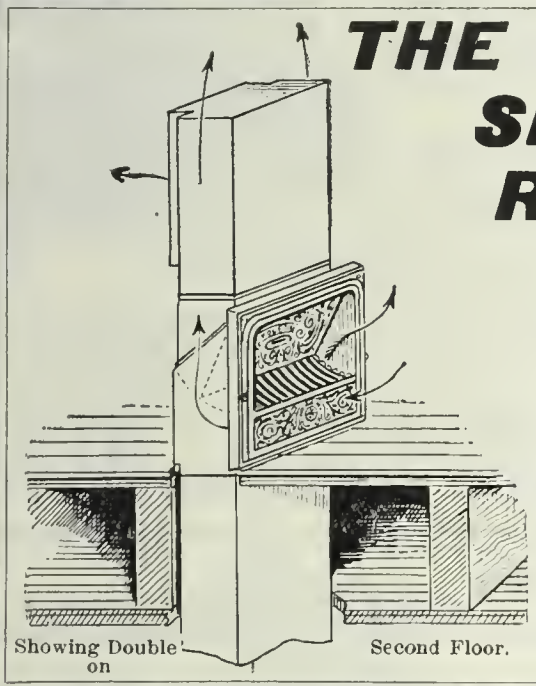


Radiating Surface Right.
Look Right.
Price Right.
All Right.

If you want the latest in Radiators, ask us.

Independent Register Co.,
152 Champlain St.,
CLEVELAND, OHIO.

THE AUER SIDEWALL REGISTER



Takes Less Pipe, Wall Stacks and Fittings.

Includes Register Box, hence is cheaper than common Registers.

No Mutilation of Carpets.
No Discoloration of Walls.
Affords Perfect Ventilation.
Made in Nine Sizes.
Send for Circulars.

AUER REGISTER CO.,
TOLEDO, O.

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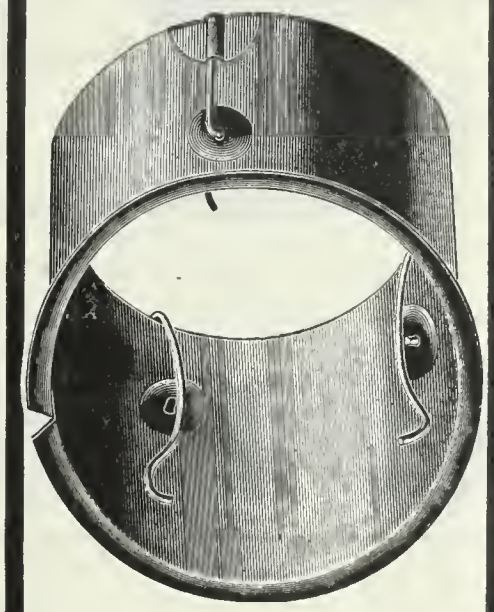
The S. & S. Patent Stove Pipe Thimble



Locks the Pipe from Pulling Out, and from Pushing In and Closing the Draught. Will last a lifetime. Nothing to wear out, and costs but a trifle. Send for sample and prices.

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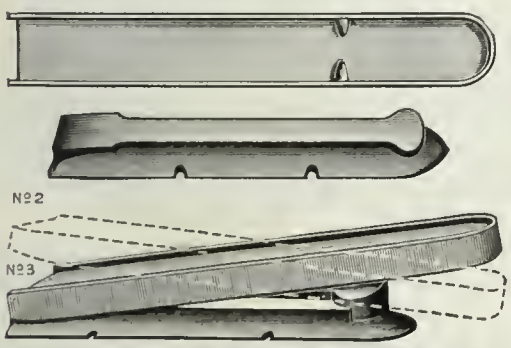
Improved ATLAS Radiator PEDESTAL



9½, 11 and 12 inches.

AVOID CUTTING THE CARPET.
YOU CAN LEVEL ANY RADIATOR.
NEAT IN APPEARANCE.

— 20,000 SOLD. —

Send for Circular and Prices.

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COAL VASES.

Plain and Ornamental Decorations.

Send for Catalogue.

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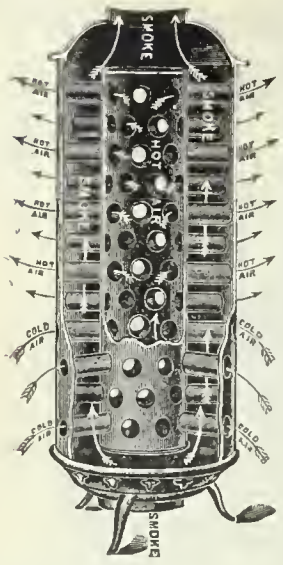


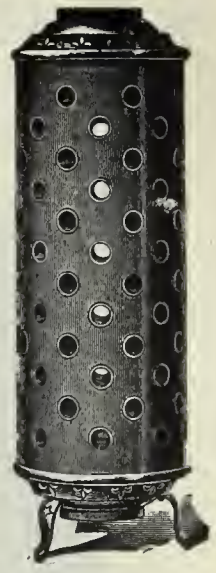
4,866 sq. ins

Count the Tubes

IN THE

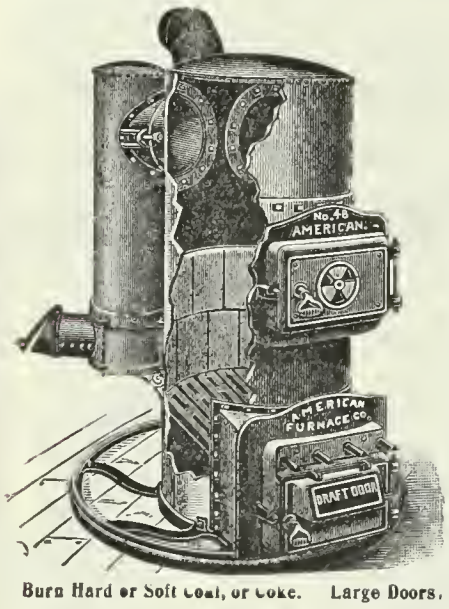
ROCHESTER RADIATOR

and you will comprehend the great radiating surface directly over the hot current where one square inch is better than six at the side.



ROCHESTER RADIATOR CO.,

100 Furnace St., ROCHESTER, N. Y.



Burn Hard or Soft Coal, or Coke. Large Doors.

About Fire Pots.

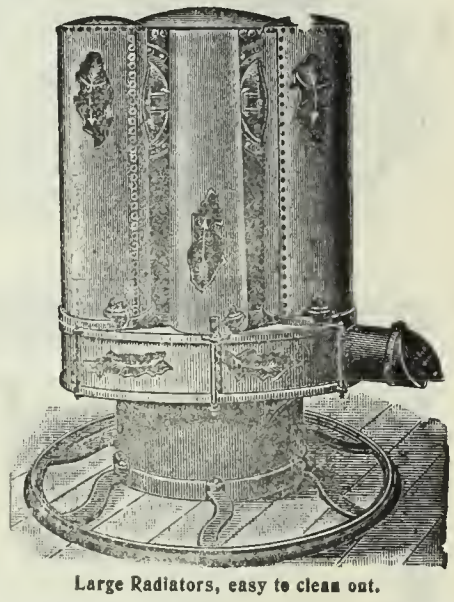
We formerly lined our fire pots with cast iron—then they cracked and warped. Now we use fire brick for lining and will guarantee it for five years. The lining is replaced through the fire door.

The **AMERICAN FURNACE** is made strong in places where other furnaces have proven weak ; it is made of heavy steel and riveted tight like a boiler. Will burn any kind of fuel.

You can only build up a permanent furnace business by handling a first-class furnace. We manufacture for the better class of trade.

The American Furnace Co.,

1911-13 PINE STREET, · ST. LOUIS, MO.


Large Radiators, easy to clean out.

Write for prices and secure the agency before the other fellow gets it.

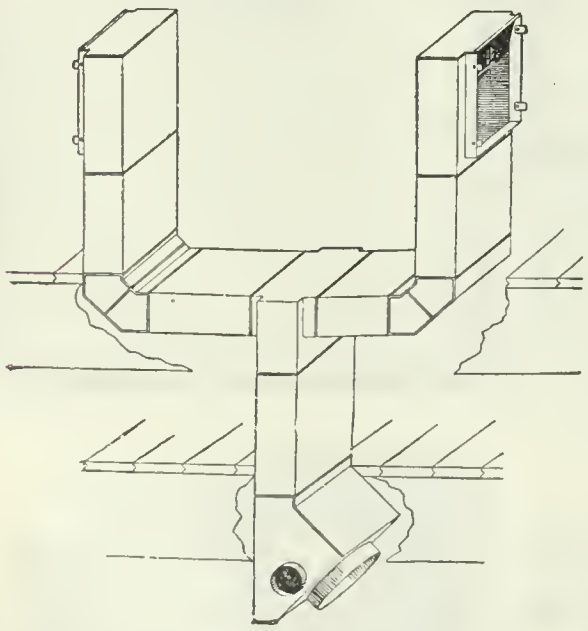
Gurney

HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES *and* STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

GURNEY AND COMPANY

WASHINGTON, HANOVER AND ELM STREETS

BOSTON, - MASSACHUSETTS



It's To Your Interest

to keep in touch with the prices now ruling on Hot Air wall Pipes. WE MAKE THEM and can tell you about it, if you'll counsel with us a little. Our catalogue and price-list can be had for the asking and may save you dollars.

Safety Furnace Pipe Co.,

Nos. 11 and 13 East Atwater St., Detroit, Mich.

THE GEORGE W. COPE Stove Pattern Works.

ORIGINAL, ARTISTIC AND PRACTICAL CONSTRUCTION

Cor. Randolph and Atwater Sts., DETROIT, : : MICH.

FOR SMART WORK

Use only "The Dean" Boilers

MADE BY

DEAN BOILER CO. 73b Pearl St. BOSTON, MASS.

BRIDGEPORT STOVE WORKS,

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MANUFACTURERS OF

COOKING and HEATING STOVES

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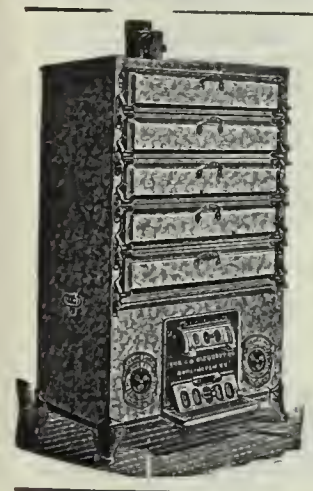

CABINET PORTABLE OVEN.

OUR LATEST PRODUCTION.

BAKES EVENLY BY THE CIRCULATION OF HOT AIR.

FOR BAKERS, CONFECTIONERS, HOTELS,

Also the best oven for Core Baking, Japanning, Enameling, etc.

Made in six sizes, single and double, for coal, wood, natural or artificial gas.

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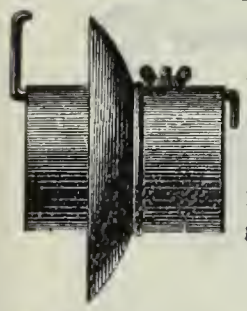

HAYLOR'S HOLD FAST STOVE PIPE

Is made 9⅛ inches long, each joint is ready, fitted with fastening device, and beautifully designed gilded collar, which measures 10⅛ inches in diameter for the six inch pipe, and 11⅛ inches in diameter for the seven inch pipe. Is sold with a guarantee that it will hold the stove pipe firm to the flue, and at the same time the pipe will not go in flue over 4 inches. Is absolutely tight and will not come loose. They are packed a half dozen, complete, to each crate.

Order from Your Jobber.

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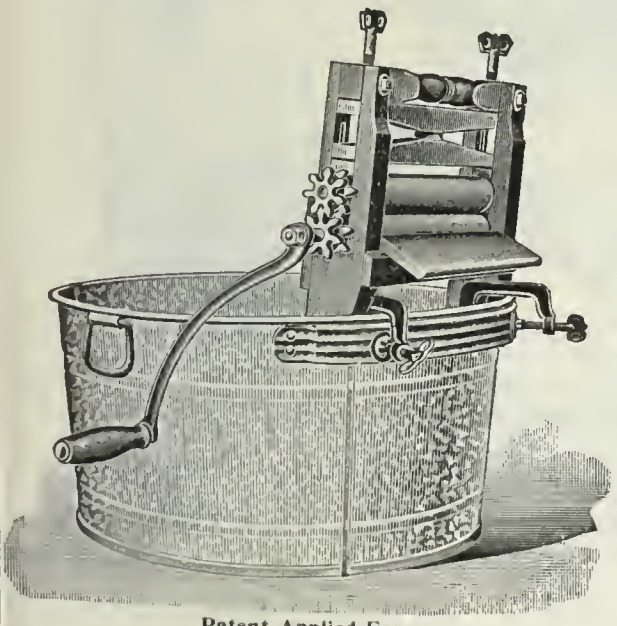
"PERFECT" GALVANIZED METAL TUBS.



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This is the only sheet metal Tub made upon which a wringer can be used satisfactorily. Your customers do not want a tub that they can't put a wringer on. Satisfy them by selling the "PERFECT."

THEY ARE CLEAN, BRIGHT, WELL MADE, WELL GALVANIZED.

Made in Four Sizes.

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SIDNEY SHEPARD & CO.,

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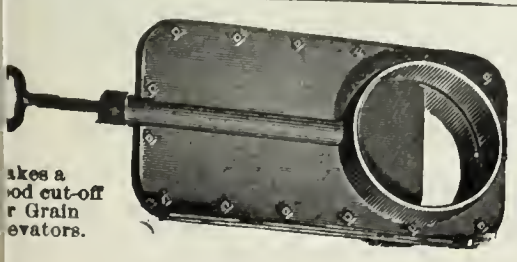

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IMPROVED WIND-GATE

SEND FOR PRICE-LIST AND DISCOUNT TO

MINER & PECK MFG. CO.,

NEW HAVEN, CONN.

STOVE REPAIRS.

Stove dealers' SUPPLIES of all kinds.

Water Fronts a Specialty.

WE GUARANTEE PROMPTNESS IN FILLING ORDERS

Catalogues, Order-Books, Postals or Envelopes sent upon application.

Largest Jobbers in New England.

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THE STEAM AND HOT WATER FITTERS' TEXT BOOK.

140 Pages. Cloth.

TELLS HOW

To Estimate Radiation.
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And Many Other Important Things that Good Workmen Must Know.

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DAVID WILLIAMS CO., PUBLISHERS
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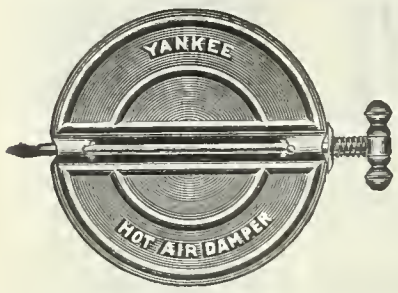
Hand Elevators and Dumbwaiters

made to be sold by the Hardware trade. Can be placed in position by any carpenter. Catalogue free.

ENERGY ELEVATOR CO.,

410 Cherry St., Phila., Pa.

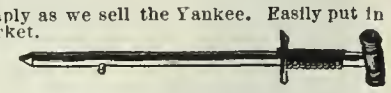


The YANKEE Hot Air DAMPER (Improved All Steel.

THE YANKEE EXCELS.

Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod is made of ¼ inch cold rolled steel and slips into damper very smoothly. **Sample sent to any Dealer without charge.**



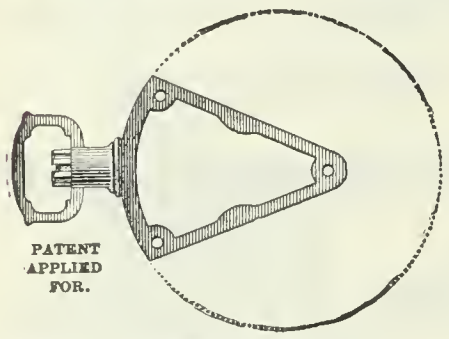
It is impossible for this rod, when in position, to move either way.

The S. M. HOWES CO., Manufacturers, 46-46 UNION ST., Boston, Mass.

Sizes: 6, 7, 8, 8½, 9, 10, 10½, 11, 12, 12½, 14 and 15. NEW YORK: A. L. Canfield, 284-286 Pearl St. CHICAGO: Excelsior Steel Furnace Co.

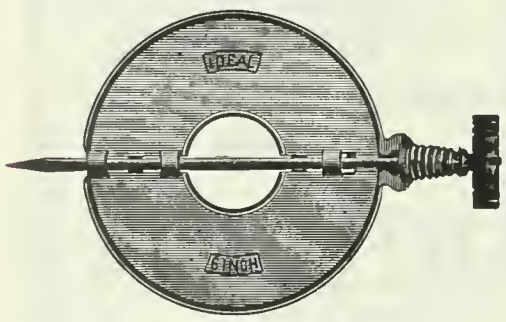
THE MALLEABLE IRON

DAMPER CLIP.



EASILY ADJUSTED
AND INDESTRUCTIBLE
WRITE FOR PRICES.
THE BROHARD CO. - Phila., Pa.

IDEAL DAMPERS, COVER LIFTERS



AND POKERS

HAVE NON-HEATING
HANDLES OF ELEGANT
DESIGN AND FINISH.
THEY ARE THE BEST.

STOVER MFG. CO.,
164 RIVER ST.,
FREEPORT, ILLS.

PATTERNS

FOR STOVES AND HEATERS.

First-class in wood and iron.

Vedder Pattern Works. - Troy, N. Y.

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WASHERS,

Machine cut, at less price than can be cut by hand. Send Sample for prices.

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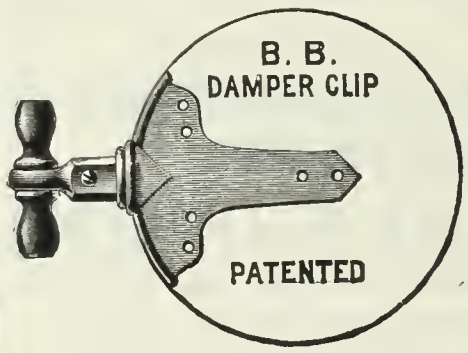
200 Ruggles St., Boston, Mass.



The B. B. Patent

DAMPER CLIP

To remove Handle, simply loosen Nut *half way*—unnecessary to remove Bolt.

BEST AND CHEAPEST.

Send for Sample and be convinced.

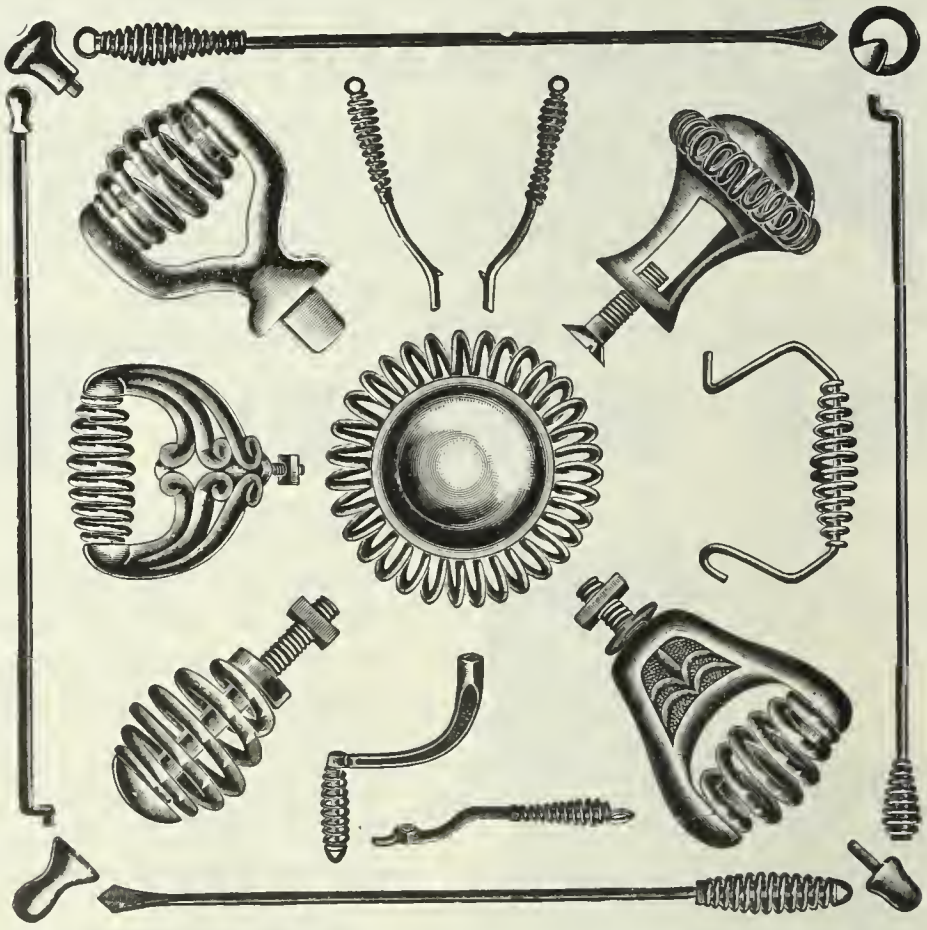
All kinds of Dampers—Plain, Uncle Sam, American and others always in stock.

Send for catalog.

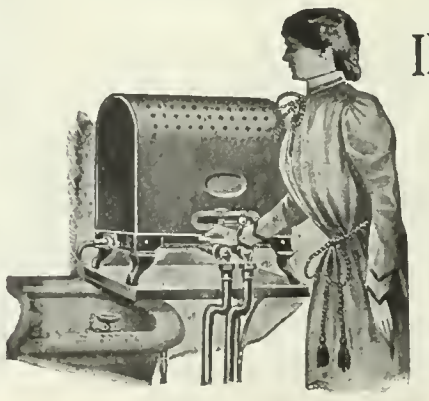
BERGER BROS. CO.,

Tinners' Hardware and Roofers' Supplies, PHILADELPHIA.

ARCTIC STOVE TRIMMINGS.



FANNER MFG CO., - CLEVELAND, O.



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Is the cheapest, the most efficient and the neatest Water Heater made. It occupies but little space and is always ready, furnishing hot water in a few seconds day or night.

Send for Descriptive Circular, Prices, Discounts, Etc.

W. J. ADAM, - - Joliet, Ills.

CABLE ADDRESS, (NICKEL.)

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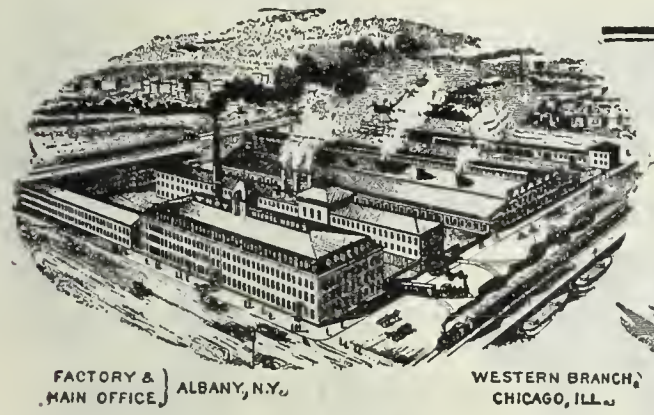

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WESTERN BRANCH, CHICAGO, ILL.

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POKERS, LID LIFTERS,
KNOBS, HANDLES, and a full line of HARDWARE.

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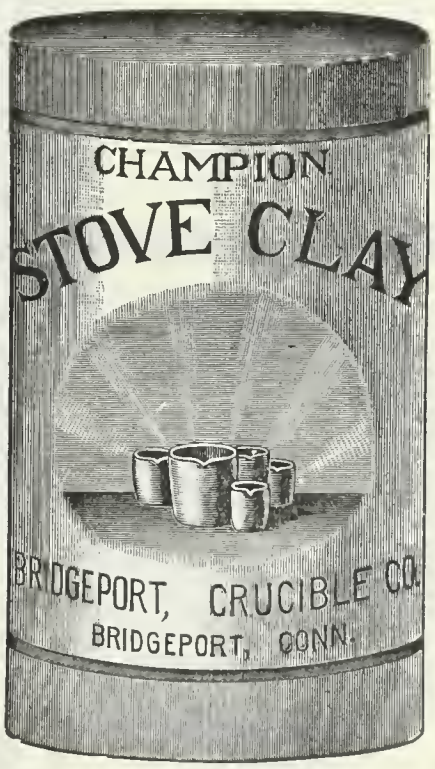
Is the only brand made of crucible materials, viz.: Imported German Fire Clay and Plumbago from Ceylon.



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Your jobber can furnish the goods.

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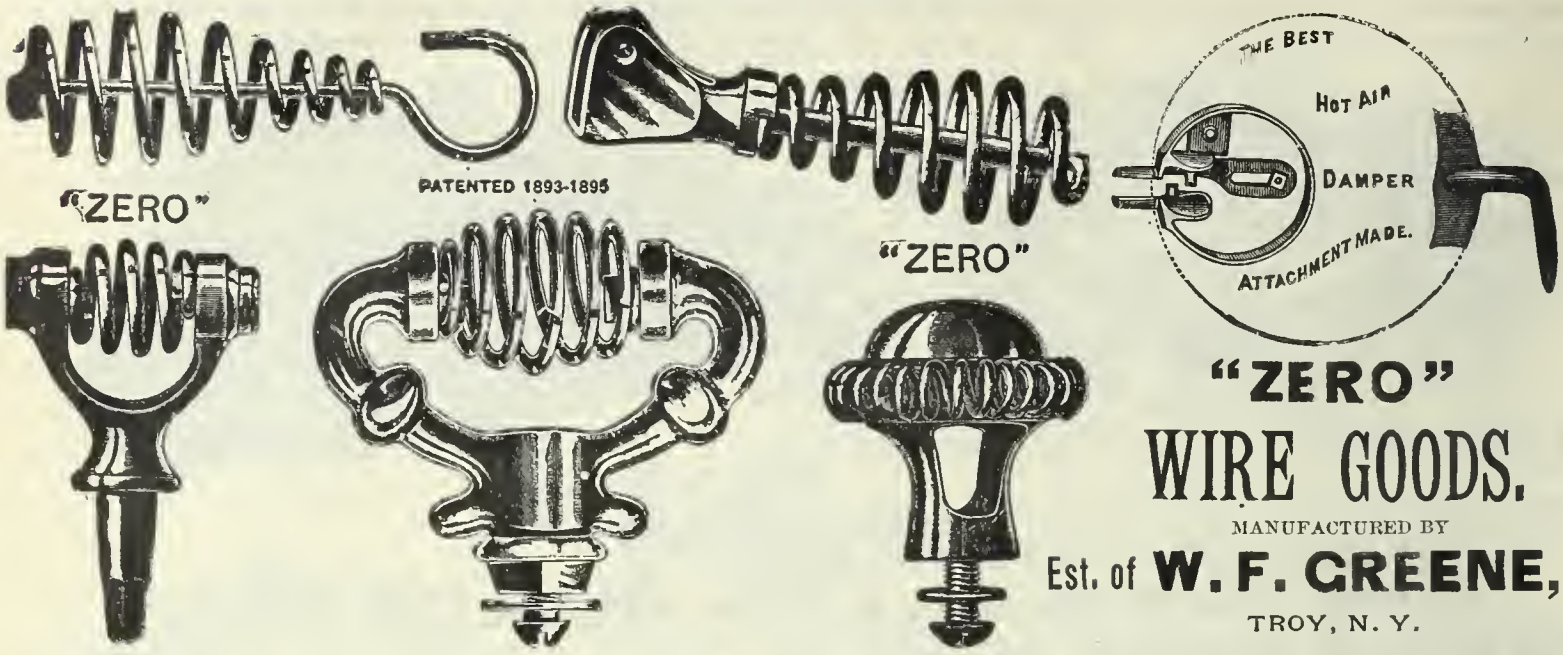

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SEND TO US FOR A
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Our **IMPROVED BLACK EAGLE** is the best polish ever made.
We except none.
A free sample will tell you all about it.
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Nickel Plate Stove Polish Co., Manufacturers, **Chicago.**

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To the Stove Trade:

We believe there is a chance for the consolidation of all, or nearly all, the stove foundries of this country into a gigantic trust.

This concern has not been approached and will not be a part of the scheme.

We shall continue, however, to make patterns for any one having the price. Do you handle a hundred Oak stoves or steel ranges in a year? If so, it will pay you to own your own patterns—get castings from your local foundry and quadruple your profits.

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ALL SIZES OF
Galvanized range boilers, expansion tanks and boilers with copper tube coils inside for heating water by steam.
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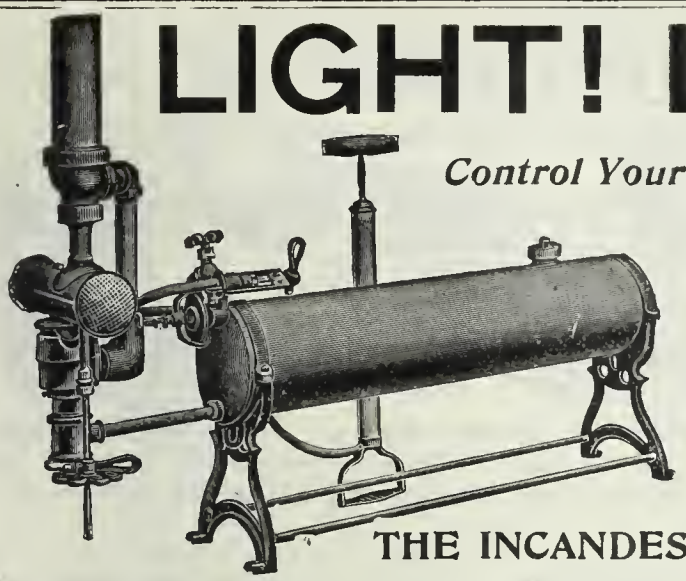
THE CHEAPEST AND BEST IS
THE AIR LIGHT

Control Your Own Gas Expense.



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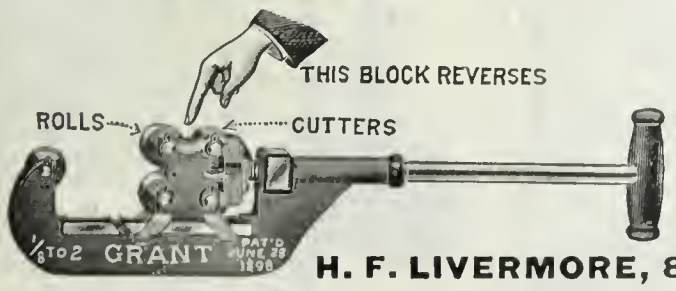
THE GRANT CHANGE PIPE CUTTER.



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Cuts with 3 cutter wheels, or with 1 cutter wheel and 2 rolls.

Changes Instantly.
Strong, light and simple.
Nothing to get out of order.

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MODEL FITTING
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SEND FOR PRICE.

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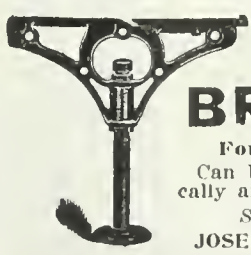

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For Sinks and Trays.
Can be adjusted both vertically and laterally.
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This PIPE WRENCH
is drop forged and built for hard usage. Does not crush slip, or lock. All parts interchangeable. Send for catalog showing complete line.
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SIXTH EDITION, ENLARGED.

With an Appendix Giving a Selection of Practical Letters and Articles Compiled from THE METAL WORKER.

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This edition contains besides the two original articles on joint wiping, by experts, a selection of letters and articles on various important phases of the subject.

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The first article in the book is written by a practical plumber, and is illustrated from photographs representing the hands and tools when wiping joints in various positions. The second, by an expert joint wiper, is also illustrated from photographs and will prove of great assistance to learners. Ample instructions are given on preparing the pipes previous to wiping the joints, with full descriptions of all tools and appliances used. The pamphlet, in short, gives all the assistance that description of the work can furnish and is the most practical and complete account of joint wiping that is published.

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CUTTERS

in three styles. **One Wheel and Roller Cutter. Three Wheeled Cutter** and the **Tool Cutter,** for cutting **Brass, Copper** and Wrought Iron **Tubes.** Also mfrs. of **Pipe** Cutting and Threading **Machines** ¼ in. to 18 in., Hand or Power.

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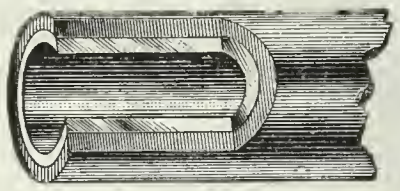
FOR PURE WATER.

Avoid, without extra expense, all danger of lead or brass poisoning.



This lining cannot be torn from the pipe.

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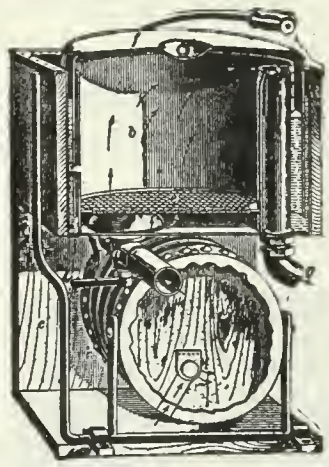

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For Testing Plumbing.

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HOSE COUPLING

FITS ANY SIZE HOSE, 2, 3 OR 4 PLY.

A glance at the illustrations will indicate its superior advantages over any other similar device now on the market. Anyone can attach it instantly. Provides a positively tight joint. Easily taken off or put on. Never loses the washer. Won't tear up the lawn

THE BEST THERE IS.

The better you satisfy your trade the better they will satisfy you.

Try a Sample Dozen.

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Write for Prices and Discounts.

The Climax

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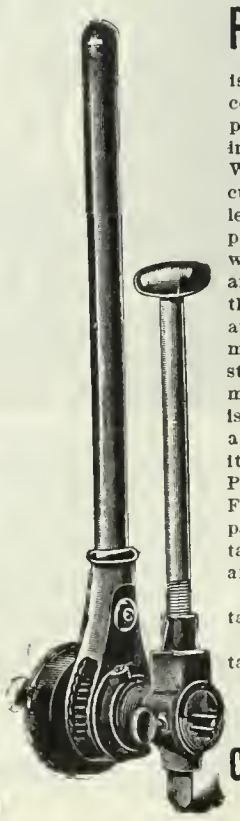

is an indispensable tool for conveniently threading iron pipe in ditches, under floors, in corners, over head, etc. With this tool threads can be cut without removing whole lengths of pipe. This tool is provided with a strong vise which securely grips the pipe and by means of the leading thread the die is forced on pipe and the thread is cut. It is made of malleable iron and steel, and while light in weight, making it convenient to carry, is very strong and rigid. The advantages of this tool make it absolutely indispensable to Plumbers, Steam and Gas Pipe Fitters, Gas and Water Companies, Machinists, etc. It takes standard size dies, which are extra if furnished.

No. 1 threads ¼ to 1 in. pipe, takes 2 or 2½ in. die, $10.00.

No. 2 threads 1 to 2 in. pipe, takes 2½, 3 and 4 in. die, $17.00.

For sale by leading jobbers.

Manufactured Solely by

C. M. Kemp Mfg. Co.,

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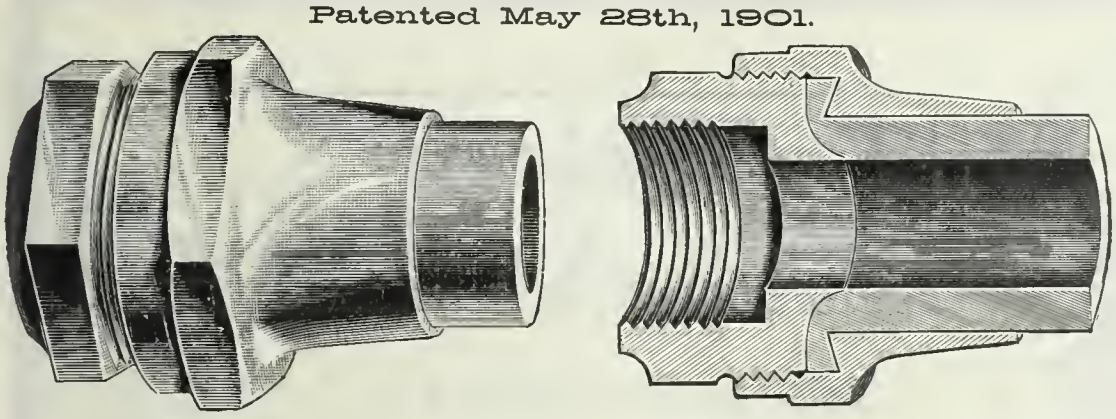
Patented May 28th, 1901.



Novelty Couplings.

Lead to Lead and Lead to Iron or Copper.

LEAD TO IRON PIPE.

A Perfect Substitute for Wiped Joints.

WATER BACK, FAUCET, BOILER COUPLINGS, Etc.

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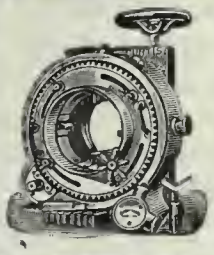

And one man can, with ease,
Cut off and thread a 12-inch pipe.
Smaller sizes proportionately easy.
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THE CURTIS & CURTIS CO.,
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Vollmer Automatic Closet.

An Automatic Anti-Freezing Closet that Works Satisfactorily.
The only absolute Anti-freezing Open Tank Closet on the market.
Send for Descriptive Catalogue.

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ZERO VALVE AND BRASS MFG. CO.,
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The No. 5 Fire Pot.

$4.50 Net.

Is light, strong and capable of bearing hard usage. The flame is blue, free from smoke and intensely hot, heating the heaviest irons in half the time required by other makes. A kettle of solder can be kept hot enough to wipe joints, *and at the same time, without removing kettle, there is sufficient room and heat to keep soldering irons ready for use.* There is no other make of fire pot that can do this Bear this in mind when you need one. The top section may be removed, *thus exposing an open fire which may be used as a torch or brazing fire;* can also be used in taking soil pipe apart, thawing frozen pipes, or wiping overhead joints. We warrant it to please; your money back if it doesn't.

CLAYTON & LAMBERT MFG. CO., Detroit, Mich.

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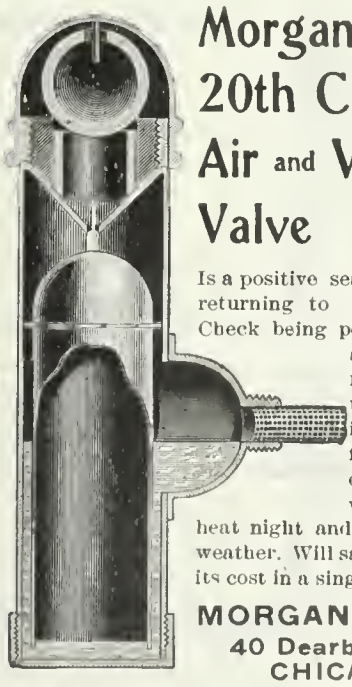
GASOLINE
SOLDERING FURNACES.
UNEXCELLED, UNEQUALLED, UNRIVALLED
FOR HEATING AND OPERATION.
NO SMOKE, NO ODOR, NO NOISE, SAFE, SURE, DURABLE.
WRITE
Burgess Soldering Furnace Co.,
COLUMBUS, O.

Morgan's 20th Century Air and Vacuum Valve



Is a positive seal against air returning to the radiator. Check being perpetually balanced in water requires no pressure to lift it. A banked fire, with drafts closed, will maintain heat night and day in mild weather. Will save four times its cost in a single season.

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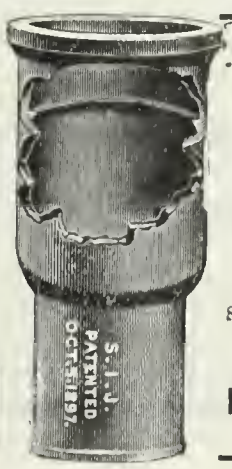

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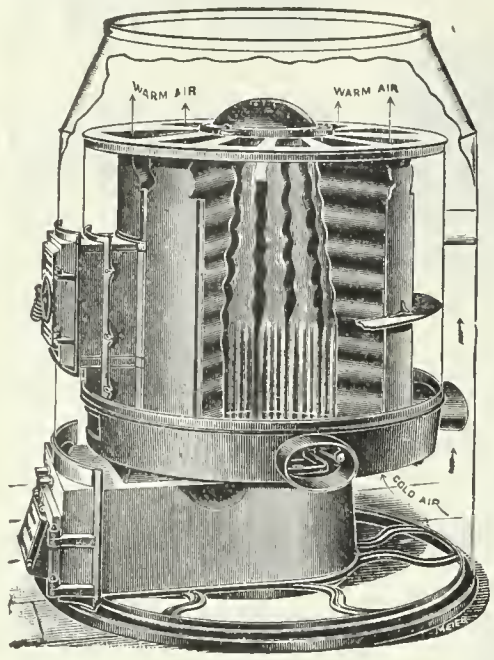
INSERTABLE
JOINT
FOR SOIL PIPE.
Sizes, 2 to 6 inches.
Light and Heavy.
Saves labor, expense, and makes a neat job.
SEND FOR CIRCULAR.
R. Estabrook's Sons,
1st St., Boston, Mass.

— WIT AND HUMOR.—"What's the difference between wit and humor?"

"If a man says humorous things about you, it makes you laugh; if he says witty things about you, it makes you mad."—*Chicago Record.*



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Sole Manufacturers : : for Canada.

The Kelsey Warm Air Generator

SEE OUR EXHIBIT AT THE PAN-AMERICAN EXPOSITION.

World's Columbian Exposition, Chicago, 1893, Award, With Medals.

For a new and original, and very efficient form of Warm Air Heater, in which heavy cast iron sections, with corrugated sides, through which is circulated the fresh air, form the fire box and combustion chamber, and are exposed on all sides and throughout their length to the fire and hot gases, thus exposing an exceptionally large surface to the fire.

For the means whereby the warm air may be directed in separate and independent channels, and distributed in such proportions as to insure uniformity of heating in different parts of a building.

Brilliant Enameled Steel Ware

This ware is now manufactured by our factory at Bellaire in the Brown Color only, same having been discontinued in all colors by our Portland, Conn. factory. Particular effort is being made to turn out a highly satisfactory and pleasing article, and all dealers are requested to order a sample lot to be convinced of the merit of this ware.

White and White Enameled Steel Ware

This ware will also be made by our Bellaire Factory only hereafter having been discontinued by the Portland Factory. A large line of hospital goods made in this ware Recommended where sanitary qualities are essential.

National Enameling & Stamping Co.

BRANCH OFFICES New York Baltimore Chicago St. Louis Milwaukee ADDRESS OFFICE NEAREST YOUR LOCATION

THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, July 27, 1901.

DAVID WILLIAMS COMPANY, - - PUBLISHERS.

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CINCINNATI.....Rooms 22-24 Pickering Building.
ST. LOUIS.....1205 Chemical Building.
CLEVELAND.....312 The Cuyahoga.
LONDON.....Hastings House, Norfolk St., Strand.

Volume LVI.....No. 4
Index to Reading Matter.....Page 59

Exports of Manufactures.

Exports of manufactures from the United States appear to have been slightly less in the fiscal year just ended than the preceding year. The provisional figures issued by the Treasury Bureau of Statistics show an apparent reduction of $14,565,000. This statement, however, is to some extent misleading, because the figures for the fiscal year 1901 do not include the exports to Porto Rico and Hawaii, which were included in other years and which were largely composed of manufactured goods. These aggregate about $25,000,000 for the fiscal year, and if added to the total of manufactured exports to foreign countries, would make the figures for 1901 just about equal to those of the preceding year. In fact, an analysis of the general export figures of manufactures, so far as available, shows in most cases an increase in 1901 over 1900, while the decrease is confined to a few articles and is due in many cases to a fall in prices rather than to a reduction in quantity. This is particularly true of the exports of illuminating oils, which, while showing a decrease of four and a half million dollars in value, actually increased nearly 50,000,000 gallons in amount. The two other principal manufactured articles in which exports show a decline in the past year, as compared with 1900, are copper and cotton manufactures, the reduction in the latter being entirely due to temporary conditions in China, where the war caused a material falling off in the demand for cotton and cotton goods. The decrease in copper exports was only in comparison with the preceding year, when a phenomenally large amount of the metal was sent abroad. As a matter of fact the exports of copper in 1901 were far larger than those of any former year, excepting 1900. In a larger number of articles the figures of 1901 showed a marked growth over those not only of the preceding year, but of any former year, particularly in iron and steel manufactures and machinery. American manufacturers, therefore, have no occasion for anxiety regarding the slight apparent decrease in the export figures of manufactures for 1900.

Aerial Navigation.

If the circumstantial accounts cabled from Paris can be fully credited, there seems but little room for doubt that the problem of aerial navigation is in the way of practical solution. Last week M. Santos-Dumont, a young Brazilian who has devoted a large amount of time to the study of aeronautics, succeeded in navigating an air ship constructed under plans of his own invention across Paris and around the Eiffel Tower, returning with ease and safety to the point of departure in the suburbs of the city. This performance he duplicated a few days later, making a journey from the Longchamps race course around the tower and back to Longchamps in 50 minutes, under the auspices of the Aero Club. Santos-Dumont's balloon is described as constructed of light material, about 150 feet long and 40 feet at its greatest width. Beneath the balloon, suspended by thin steel wire, hangs a cradle 50 feet long, composed of light pine sticks bound together with aluminum, containing a four-cylinder motor of 16 horse-power. Suspended from the center is a triangular cradle in which is a screw, the flanges of which are 12 feet wide, and which revolves at the rate of 200 turns a minute. The aeronaut sits in a small basket at the opposite end, controlling the rudder and the valves of the motor by lines. In the course of his experimental trip M. Santos-Dumont, it is asserted, was able to steer his vessel through the air in every direction, north, south, east and west, turning to the right and to the left, ascending and descending as easily and gracefully as a great bird, both with and against the wind. It would seem from the accounts available that the Brazilian's aeronautic performances are as much in advance of those of Count Zeppelin's and other accomplishments in the same line as those surpassed the ordinary ballooning. That he was able to navigate his vessel in the air as readily as a steamship is navigated in the water presents a conclusive proof of the value of his achievement in aerostatics. The claim made long ago by enthusiastic aeronauts that men would be navigating the air in the twentieth century seems to have come within appreciable distance of consummation, even earlier than was generally expected.

The Drought.

Another week of excessive heat in the central valleys of the country and the middle Rocky Mountain section has intensified the previously existing drought and enlarged its area. News from Kansas, Missouri, Nebraska and Oklahoma proves that the heat has been disastrous to the early corn crop, while the corn crop in the Middle West is likely also to prove a failure should abundant rains fail to come within the next week or so. While it is probable that the crop scare has been largely engineered for purposes of speculation in the Eastern markets, there seems to be no doubt that the situation of the farmers in the West is becoming a serious one. Exhaustive estimates gathered by the New York *Journal of Commerce* this week from all the farming sections affected by the drought indicate a loss of more than 300,000,000 bushels of corn as a result of the unfavorable weather conditions. The State of Kansas, that within the last few years has profited so materially from its abundant crops, appears to be the greatest loser. Not only is her corn crop likely to be materially cut down, but she has suffered from a short hay crop, owing to the drying up of the pastures. This has also affected the live stock of the State. The loss of cattle, it is feared, will be serious. There is still room for hope that copious rains may change the situation in regions where the damage has not reached a des-

perate point, but there seems little doubt that in a large proportion of the corn belt the damage already done is beyond repair.

One Possibility of the Great Strike.

It may be a little early to speculate on the result of the contest now on between the United States Steel Corporation and the Amalgamated Association, says *The Iron Age*. Strikes or labor troubles are uncertain matters, it being difficult to determine when they start whether they will be of short duration or extend over a long period of time. Some strikes can be easily gauged at their beginning because of the weak condition of one side or the other. In this case both sides seem to be well equipped to conduct a long struggle. Special considerations may, however, induce one or the other of the parties engaged to quickly make overtures for peace. In view of the important interests involved and the great amount of injury that can be done not only to those immediately affected, but also to a very wide circle of business connections, it is to be hoped that the struggle may not continue for a long time, but that it will be brought to an early termination.

A strike lasting three or four weeks would not be a very serious matter, as it would merely mean the ordinary summer vacation. It would probably simply result in an accumulation of business, which would keep the mills very busy for some considerable time in the effort to catch up with orders. This would make the fall months active and would probably subject no one to great inconvenience. Should the strike continue for three months, or as long as the labor troubles in the same mills continued last year, it would mean the cutting off of a very large part of the supplies necessary for great manufacturing consumers, who need to operate their works actively for some time to come in preparing for fall and winter requirements. This would be unfortunate for many interests concerned, unless arrangements could be made for importing large quantities of necessary material from abroad. It is not believed that a sufficient supply could thus be obtained, as foreign manufacturing establishments are hardly in a position to turn out great quantities of what would be needed here on such comparatively short notice. And, further, it would require considerable nerve, not to say recklessness, for any consumer to place orders abroad for large quantities, as he would face a probable loss if the strike ended before such purchases were marketed.

The result of a long stoppage, it is now reasonable to suppose, would be of a similar character to that which was experienced on the reopening of the bar, sheet and tin plate mills last fall after a shut down of three months. Stocks of manufactured goods will be so completely exhausted, and the supply of rolling mill products so much in arrears in meeting the requirements of the country, that the manufacturers will again find their facilities taxed to the utmost for months afterward. In that event the easing of prices anticipated from the steady increase of producing capacity will be postponed. If the strike should be extended to other plants controlled by the United States Steel Corporation, as threatened by President Shaffer, the effect on the iron and steel markets will be still more pronounced.

It is a mark of breadth of view that the National Retail Hardware Dealers' Association, as reported elsewhere, declines the suggestion that manufacturers and jobbers should contribute funds to aid it in carrying on its work. The association is wise in preferring to maintain an independent position. Contributions given in the way suggested might be an embarrassment in determining questions relating to trade practices and abuses and the proper method of meeting them. Contributions from those outside of the association would have a tendency to bias judgment and prevent the openness of mind and freedom of action which are essential to the carrying on of the important work which retail merchants are called upon to do for their protection and advantage. For certain of these abuses both manufacturers and jobbers are doubtless responsible. A dignified and independent attitude in a matter of this kind will meet with general approval and command the respect of the trade.

One point has not, so far as we have observed, been brought out in the discussion of the advantages and disadvantages of the great modern consolidations. It is that full employment of the plants does not mark the point of minimum cost. All the consolidations count among their works establishments poorly equipped, antiquated and inefficient. When the demand forces these into activity, or, in other words, at the period of maximum production, these works must be run, in spite of high cost. The lowest cost is reached when only the best plants are in operation. It may happen, therefore, that a consolidation may make more money, even under a slight reduction in prices, when its output is below the maximum.

The foreign trade returns of the United States for the fiscal year just closed make a remarkable record. It was expected that the exports of merchandise for the 12 months would round out an even $1,500,000,000. The figures up to June 1 left little doubt that this would be the case, but the exports during the month of June showed a sharp falling off, leaving the total value of exports for the 12 months at $1,487,656,544. This is a remarkably handsome showing, however, considering that it is nearly a hundred million dollars more than in the previous fiscal year, which itself made a record. An interesting fact in this connection is that for the first time the exports from this country during the year have exceeded those of Great Britain. Had the shipments to Porto Rico, Hawaii and the Philippines been included in the latest returns among our foreign trade, the total would have reached the $1,500,000,000 mark, but the countries named are now included among domestic consumers.

Many novel methods of moving buildings have been adopted in various parts of the country in order to meet local conditions and circumstances, but among the most curious ways of doing work of this kind is that of utilizing barges or flat boats to float buildings across stretches of water. One case of this kind occurred not long ago in Pittsburgh, and a later one is that at San Francisco, where a man, having constructed a small hotel, desired to move it to a lot which he had secured at Benicia. The house was first moved to the wharf and when the tide was right was pulled onto a barge by means of a horse windlass, after which the barge was towed to Benicia by a river steamer.

In Italy a new antidote for labor disturbances has recently been inaugurated in the form of an antistrike league, the membership of which is composed of workmen of the Roman Catholic faith. The watchword of the league is: "Freedom of action and the right to work." The leaguers are reported to have already achieved a notable victory at Genoa, where a number of them took the places of striking coal heavers and kept at work in the face of threats and actual violence.

New Yorkers are probably the most nomadic citizens in the world. At any rate, they change their abodes oftener than any other people in this country. Recent statistics show that 65 per cent. of the inhabitants of Gotham move about every year.

LOCAL STOVE ASSOCIATIONS AND PRICES.

Local associations among stove manufacturers have been in existence more or less for many years and the good or evil they have accomplished is a matter of history. As some people would sum it, "they were complete humbugs and no good except to further the plans of some schemers, &c., who were using the other members for their own personal advantages." Others were always in favor of association and endeavor faithfully and honestly to carry out all measures enacted in an upright and conscientious manner, but it is very discouraging to such people to see many not so scrupulous, working all things for their own personal advantage, regardless of their solemn pledges and agreements made in their meetings.

It is not necessary to dwell upon these unpleasant features, but it can be emphatically stated that organized bodies of business men are going to control and shape the policy of profit making in business, for that is the object of business, and all progressive and studious men are devoting their spare moments to this subject and are looking for the right way, as well as the best way, to secure them. It may be added that these people are not given to the study of one side only of the question, as they fully recognize that the other side demands and exacts its share of their attention.

It can be safely stated that the opponents of local organizations believe that they can overcome all their competitors or, in brief, secure their share of the profits, by pursuing their own course, or, to use the cant phrase, "We run our own business." If the object of the concern is to do business, they can do it on this plan; but if it expects to make profits it cannot be done that way. Selling goods at cost means no profits; selling goods less than cost is a dead loss, and when you boil down all the objections to associations it is compressed in about one formula, "We have got the capital and we can sell the goods as cheaply, if not cheaper, than others."

There is no mystery in stove making, and experienced makers can judge of any others' costs. No one can deceive the other and prices at which goods are sold are an open book; "confidential" prices are absolutely public, and every traveling man gets his opponents' latest "confidential." In short, while it has been more or less the policy to buy and sell goods under cloaked conditions, publicity is the rule these times, and a sale of almost any kind is public about as soon as the price has been made.

A local organization in one of the large cities which was very successful in maintaining prices and making money for all some time ago are now at sword's points and, with the help of dealers, builders and others, are presenting consumers with the finest goods that can be made for about cost or less than cost and apparently are quite happy over the matter; but the balance sheet at the end of the year will be sure to have the misery column stacked up if it is continued.

It seems that it would pay to keep up local associations, and if an independent salaried official or secretary was maintained who could devote all his time to its interests, it would prove a much better investment than selling goods for cost. Stove dealers are not benefited by cut prices or fluctuating ones as a rule, as whatever they get on reduction is passed over to the consumer, who does not appreciate it, nor does he buy one more stove on account of it.

The Pittsburgh Stove & Range Company

of Pittsburgh, Pa., have just issued Supplement No. 1 to Catalogue No. 43, relating to Cinderella ranges and heaters. The leading steel range shown is the Cinderella Special, which is said to embody every practical improvement known in steel range making. The outside construction is polished, annealed and patent leveled, blued steel of No. 18 gauge, while the inside is of cold rolled steel of No. 14 gauge. All parts that are exposed to the direct action of the fire are of double thickness, with an asbestos millboard between, all securely riveted together in a workmanlike manner. The ovens are made of No. 14 gauge wrought steel, the top oven plate being fully protected from the action of the fire, while the bottom oven plate is supplied with cast iron braces to prevent buckling. The fire box is of large capacity, the fixtures being interchangeable for all sizes. Three kinds of grate can be supplied—the duplex, the flat bottom and shaking, and the wood grate. The top frame of the range is cut in four sections to prevent cracking and warping. The oven door is balanced and provided with a gravity handle, and the base is ventilated, which feature, it is claimed, removes any possibility of overheating the floor. Attention is called in the supplemental catalogue to the Junior Cinderella Oak, a neatly designed stove for hard or soft coal or wood, made in four sizes, of attractive exterior. Another specialty is the Forest Cinderella, a sheet iron construction designed for burning wood as a fuel. This is made in four sizes and has a capacity for taking wood in lengths ranging from 18 up to 25 inches.

Good Service by the International Heater Company.

The International Heater Company of Utica, N. Y., are favoring their friends in the trade with a very neatly printed pamphlet entitled "Good Service." It tells something about their facilities for manufacturing high class goods, and also points out the fact that over a half century's experience has taught the company how to properly meet the wants of those requiring heating apparatus. As the company put it, the pamphlet is intended to convince the reader that they have every manufacturing, warehousing, shipping and office facility for giving good service. Heaters of almost every conceivable style are furnished, and in order to set the merits of these goods properly before the trade the company publish nine separate illustrated catalogues and six price-lists. In fact, their very latest catalogues, from which all obsolete patterns have been eliminated, show 395 styles and sizes of heaters.

The company have a New England depot located at 198 Spruce street, Chelsea, Mass., which they point out is "something more than a desk and a 'phone." It is, in fact, a substantial, commodious warehouse with an office annex, and is accessible by either steam or electric cars, being 20 minutes' ride from the business center of Boston. Large quantities of repairs, carefully fitted and finished, embracing grates, fire pots, ash pits, radiators and smaller parts in almost endless variety are here carried in stock. Scattered through the pamphlet are half-tone illustrations of some of the leading lines of heaters manufactured by the company, also interiors of different departments of the works.

An Old Cook Stove.

Allen W. Williams, secretary and treasurer of the Pioneer Stove Company, who are an outgrowth of the Gill Stove Company, Columbus, Ohio, has recently secured, after considerable correspondence, a stove made by John L. Gill something over 60 years ago. At that time the Gill works were located near the spot where the Columbus City Prison now stands, and the store in question was among the first "down draft" constructions made. There was at one time a long litigation in the courts regarding the patents on certain parts of the stove, but the matter was finally settled in favor of the Gill Company. The "hot air" stove was originally made to burn wood, the places where the lids are now usually found being covered with gridirons.

The stove was purchased by J. S. Leedon of Bellefontaine, who in a letter notifying Mr. Williams in regard to the matter stated that the lady from whom he bought the stove had it for 60 years, and it was second-hand when she purchased it. Out of curiosity Mr. Williams wrote George W. Gill on this point and in reply received the following:

"The stove referred to was manufactured by my father between 1838 and 1842. I remember seeing such stoves in the scrap heap, but never saw a new stove of the make. The character of the material is evident from its durability."

THE WESTERN OIL AND GASOLINE STOVE TRADE.

The trade this season in oil and gasoline stoves has been unusually heavy. This is due to two causes. The advertising done by the Standard Oil Company has undoubtedly had a strong influence. The company have advertised extensively in local newspapers and magazines, calling attention to the advantages of oil and gasoline stoves for summer cooking. without alluding to any one line of stoves. This has led many people to visit hardware stores and inquire into the special features of such stoves. Bright and wide awake salesmen have not failed to take advantage of this increased interest and have made good sales. The extremely hot weather has been another strong influence which has helped the trade, but unquestionably it has been greatly assisted by the advertising done by the Standard Oil Company. It is further stated that the export trade has been greatly stimulated by the advertising abroad done by the same corporation. One Western manufacturer recently shipped a single order to a foreigu buyer comprising three carloads.

Some delay in the delivery of oil and gasoline stoves is now being caused by the shortage in the supply of steel sheets. due to the strike in the sheet mills. Some of the stove manufacturers have been badly caught by their inability to lay in a large stock before the strike began. It is stated that thousands of stoves are lying in factories unfinished, waiting for the sheet steel parts. This causes great inconvenience. and unless the strike is soon settled will mean much financial loss to the trade. The stoves must be made up quickly to be sold to consumers this season. If they have to be carried over to next year it means the locking up of a great deal of capital.

Monogram Stoves and Ranges.

The Quincy Stove Mfg. Company, Quincy, Ill., favor us with a copy of their new catalogue, showiug the large line of stoves and ranges which they manufacture under the Monogram trade-mark. The catalogue comprises 85 pages and is substantially bound in a flexible muslin cover of maroon color bearing a highly decorative design in silver. The distinctively new goods shown in this catalogne are the Matchless Monogram steel range, the Art Monogram steel range, the Home Monogram cast range and the Novel Monogram upright Todd stove. The Matchless Monogram is a handsomely designed steel range having a body of Wood's planished steel, lined with asbestos mill board, a heavy cast base skirting, a profusion of nickel trimmings, pouch feed, end feed for wood or coal, spring balanced oven door and full cast reservoir. It is made in six sizes and in all styles.

The Art Monogram is also of pleasing design, but less elaborately decorated, and is furnished in eight sizes and all styles.

The Home Monogram cast range is a fine specimen of the molder's art, the doors, skirting and high shelf being enriched with bold designs in scroll work. Style A has a solid cast base and style B is mounted on legs connected by an ornamental skirting. This range is made in six sizes. The Novel Monogram upright Todd is made in two sizes, for wood only, and is so coustructed that the heat circulates between the linings and the ornamental jacket in the same manner as in the horizontal Todd. This is a novelty in Todd construction and is expected to prove popular.

Other products shown are the Prize Monogram steel range in eight sizes, the Prize Monogram steel cook in six sizes, the Pride Monogram steel range in eight sizes, the Pride Monogram steel cook in six sizes, the Jewel Mouogram cast range in six sizes, the Comfort Monogram cast range in seven sizes, the Famous Monogram cast cook in six sizes, the Quincy Star cast cook in five sizes, the Leader Monogram cast range in six sizes, the Birch Monogram cast range in seven sizes, the Maple Monogram cast cook in six sizes, the Quincy Comet cast cook in five sizes, the Monogram and Quincy oaks each in six sizes, the Junior Monogram and Quincy Boy Oaks each in three sizes, the Quincy Peerless hot blast coal heater and the Quincy hot blast coal heater each in two sizes, the Quincy Beauty and the Quincy Faultless wood heaters each in two sizes, the Bi-Me Monogram wood heater in two sizes, the Raven air tight for wood and the Topsy coal heater with top cooking holes in two sizes.

THE STEEL STRIKE AND THE STOVE TRADE.

It will not surprise the knowing ones in the stove trade to see the prices of oak stoves, steel ranges, steel cooks and other goods made largely of steel sheets advanced sharply in the near future. The stock of steel sheets throughout the country is quite light, while the production has been heavily cut down by the strike in so many of the mills of the American Sheet Steel Company. The stove manufacturer is very lucky indeed who succeeded in securing deliveries of sheets in such quantities that his stock will enable him to continue to make up goods and supply his customers. From present indications the strike is likely to continue for so long a time as to considerably embarrass the trade.

Champion Monitor Steel Ranges.

We have received from the William Resor & Co. of Cincinnati, Ohio, a copy of a neatly printed pamphlet of 20 pages, illustrating and describing the Champion Monitor Steel Ranges. which are made in varieties adapted to meet the usual requirements. The stoves are of handsome exterior, with an amount of nickel employed to make a pleasing contrast with the black surfaces. Four sizes of body are made, those of the full nickel line being of Wood's planished steel, closely hand riveted, and lined throughout with asbestos, which serves to retain the heat where needed, while at the same time preserving the steel. The bottom of the oven is made in two pieces, flanged and very closely riveted, the work being done in such a way as not to retard the draft and at the same time prevent the bottom of the oven from warping or buckling. The company point out that one set of linings and grates will fit the fire box of all sizes, and that the grates can be removed through the front without disturbing the linings or the water heater. The company use their own reversible combination coal and wood duplex grate, which is well adapted for all kinds of fuel, and they furnish when especially ordered an extension fire box for wood. The smoke box and reservoir casings are made of cast iron, which, it is claimed, is not subject to the action of creosote, hence will last a lifetime without requiring repairs. The oven door being balauced is easily operated, and when let down forms a commodious oven shelf. The pamphlet shows the Champion Monitor combination coal and gas range in nickel finish, also the Monitor gas range, a special catalogue of which the company will send to any dealer on application.

Increasing Furnace Trade.

Many heating contractors still confine themselves to furnace work, and notwithstanding the increased competition in the heating field which has come from the wider introduction of steam and hot water heating and the advantages which these systems have for buildings covering a large space of ground they find no difficulty in showing that a furnace heating system has many peculiar advantages. At the same time, those who make a specialty of furnace work find it necessary to adopt various schemes to attract the attention of possible customers. and to render a furnace system of heating inviting to those who study its advantages for providing a pure and comfortable atmosphere. The arrangement of hot air furnaces in a show window with registers, tin pipes and elbows has been so general with the trade that instead of attracting attention it is apt to be passed by unnoticed, although displays of this character when made with some originality have much to recommend them.

The method of interesting possible buyers adopted by the Bedford Heating Company of Brooklyn, N. Y., who

sell many of the Kelsey warm air generators, made by the Kelsey Furnace Company of Utica, N. Y., is something of a departure from the ordinary practice and it has the merit of novelty. The company have made a neat display in one of their show windows of the complete plans of a residence which they have heated, on which are the working drawings of the furnace heating system, and in connection with the drawings is shown a fine photograph of the building heated. The building is a handsome residence of one of their customers and makes a very pretty picture, which in itself is enough to catch the eye of the passer by. The plans have been especially prepared and clearly show the heating system. This method of bringing furnace heating before those who own property is well adapted to the present time. The ability to read and understand architectural drawings is possessed by many more people at this period than ever before. Such an exhibit cannot fail to make a good impression on this class of buyers, and there are many furnacemen who will find little difficulty in making a similar display. The example set is worthy of being widely followed, particularly as the season for furnace work will soon be at hand.

ODD PLATES.

THE A. & J. MFG. COMPANY of Gadsden, Ala., have been organized, with a capital stock of $10,000, by Otto Agricola and others, for the purpose of manufacturing Stoves, Hollow Ware, &c. Otto Agricola is president of the concern and E. S. Jones, E. P. Smith and J. G. Ewing directors.

WESTERN advices under date of July 20 are to the effect that a deal was closed on that day by which the Ferris Stove & Mfg. Company, for many years located in St. Louis, and who were recently heavily damaged by fire, will locate in Terre Haute, Ind.

WILLIAM RESOR & Co. of Cincinnati, Ohio, refer to the Monitor base burner with front sheet flue which they introduced to the trade last season as admirably adapted to the use of hard coal and as most powerful in operation. The general construction is the same as that used in their Monitor parlor wood base heater and offers, they claim, every advantage to the dealer securing the agency of the stove. The diving flue is in front, extending the entire width of the stove, being what is commonly known as the sheet flue. The draft is taken in through the bottom plate, carrying into the stove the heavy foul air which generally settles near the floor. After passing through the bottom plate the air enters the draft box or distributer, from whence it is passed under the grate throughout its entire width. The grate is of the duplex pattern with outer shaking ring. The bottom flue encircles the draft box, thus heating the air before it reaches the fire. The firo pot is large and the arrangement is such that the fire is under complete control at all times. Two large circulating flues are fitted in the rear corners of the stove, thus affording ample circulation of air to uniformly heat the room in which the stove may be used.

THE PITTSTON STOVE COMPANY of Pittston, Pa., are about putting on the market a new Range which will be known as the Colonial Happy Thought. A leading feature will be an improvement in the duplex grate, while another will have to do with the flue construction. The design is attractive and the company feel confident the new range will meet with wide popularity. They are also arranging to have a new line of Parlor Stoves ready by the time the season opens.

JOSEPH H. GIARTH has leased the foundry and machine shop at Altoona, Pa., formerly operated by J. W. Bain, for the purpose of manufacturing a line of Hot Air Heaters and other heating appliances which he has invented.

THE J. W. PAXSON COMPANY, Philadelphia, continue very busy, some recent orders including a complete foundry equipment, cupola, ladles, &c., for export to Cuba. They are also furnishing the American Sanitary Company, Elizabethport, N. J., a full foundry equipment, including a No. 16 Paxson-Colliau cupola, sand blast machinery, cranes, blowers, rumblers, &c.

THE MICHIGAN STOVE COMPANY are supplying their agents with beautifully designed transfer papers to be used on glass. One is intended for a store door and bears the time-honored request, "Please close the door." Another is to be used on showcases, and tells the reader, "Don't lean on the glass." The Garland trade-mark is used as a decorative feature. The company are also distributing circular stickers showing the Garland trade-mark, which are ready gummed so that they can be attached anywhere for advertising.

THE COOK & VAN EVERA COMPANY, Chicago, have enjoyed a better trade this season in Oil and Gasoline Stoves than in any previous year. The season opened a little late, but orders have come in so fast and for such quantities as to make up for it. They have found the trade in cast goods not running particularly heavy, especially cooking goods, but their Furnace business has never been better. They are agents for the Kelsey Furnace, and their inquiries from prospective users are steadily on the increase. D. S. Cook of this company is in Colorado with his family, but the business is ably conducted by D. W. Van Evera, who enjoys the rush of orders.

GEO. M. CLARK & CO., Chicago, have never been so busy in their history as this summer. They are doing the largest business in Gas and Gasoline Stoves and Water Heaters that they ever had. The company took a proper view of the situation when the possibility of a strike in the sheet mills was discussed, and secured such a large quantity of sheets that they are not suffering from scarcity of this necessary material, as are some of their competitors; consequently they are in a position to steadily meet the requirements of their trade. The company will shortly issue their new Heater catalogue.

THE CHICAGO HEATER & SUPPLY COMPANY of 54 Dearborn street, Chicago, are sending to the trade a four-page circular devoted to the new Superior Warm Air Furnace, which is made with the fire pot in sections, with a large combustion chamber surmounted by a top return flue steel radiator. The circular also presents a view of the grate and ash pit, showing how readily new grate bars may be inserted. The furnace is made in four sizes, with fire pots 22, 23, 25 and 28 inches in diameter. The concern are the Western agency of the Utica Heater Company of Utica, N. Y.

The National Retail Hardware Dealers' Association.

We have received the following communication from M. L. Corey, the secretary of the National Retail Hardware Dealers' Association, which relates to a suggestion made by a gentleman prominently connected with one of the State associations that manufacturers should contribute money to aid the National Association in carrying on its work:

While we appreciate the motive that prompted this letter, and he also states this was written without our knowledge or consent, our position on this point was plainly stated in the June issue of the *National Hardware Bulletin*, a quarterly publication sent regularly to every member of all the different States affiliated with the National. It reads as follows:

"It has heretofore and will continue to be the aim of our association to accept no money to carry on our work outside of that contributed by our regular members or those dealers in unaffiliated States who hold honorary memberships. There are many manufacturers and jobbers who would willingly contribute for the advertising this would give them and other purposes not necessary to name, but if we are to succeed we must remain independent and under no obligations to any firm with whom our interests may clash."

We are an organization of retail dealers exclusively, working for the individual and general advantage of our members, representing millions of invested capital, and ought to be self supporting. All concede that general results must be obtained by uniting all organized States and working through one head. Admitting this, then $1, or even $5, each should not be prohibitive.

Some of the manufacturers and jobbers have been trespassing upon legitimate and what should be exclusive retail ground. Others, encouraging and aiding il-

legitimate competition and promulgating new departures, calculated to eliminate the retail dealer entirely. We have been trying to get a better understanding and mend matters on a friendly, mutual interest basis between jobber and dealer. Our attempts have not always met with success, and an accumulation of unsettled complaints must be considered as nearing the point where the road forks.

We believe our contentions are right, and in united effort will win. These are a few of the reasons why the National Retail Hardware Dealers' Association cannot accept aid from any manufacturer or jobber.

THE CHICAGO HARDWARE DEALERS' PICNIC.

The cultivation of sociability among Hardware dealers is one of the leading principles of the Chicago Retail Hardware Association. Sociability is promoted in a variety of ways, never being completely lost sight of even in the most important business meetings. One of the leading features of the strictly social side of the organization is the annual picnic, as on that occasion the members can relax completely from the cares of business and can include their families in the entertainment provided. The seventh annual picnic of the association was held on the 17th inst., at Fox River Grove, some 40 miles northwest of Chicago. Two special trains, comprising 23 cars, were required to convey the members, their families and their friends to the grounds, which were on the line of the Chicago & Northwestern Railway. The arrangements were in charge of the following committees:

Executive Committee: Anthony Engelhardt, president; W. B. Costello, treasurer; Fred. Ruhling, secretary; W. T. Gormley, H. E. Gnadt.

Refreshment Committee: H. C. Peppler, J. F. Borchardt, L. E. Steinagle, F. H. Schanze.

Transportation Committee: J. L. Smith, G. R. Lott, Levy Rosenberg, Fred. Kurtz.

Entertainment Committee: F. F. Porter, O. Stebbins, W. J. Krueger, H. Stuckart, G. A. Engelhardt, Otto Hagen, C. E. Peterson, Emil Sanders.

Games Committee: D. McLaughlin, A. L. Adam, Martin Engelhardt, Sig. Melhon, Hans Fehr, John Schubert, G. Pfeiler, C. A. Dalstrom.

The members of these committees all worked vigorously and effectively to make the seventh annual picnic one of the most memorable days in the history of the association. They were favored by good weather and a large attendance, and the arrangements were so well made that everything passed off smoothly.

Among the amusements of the day was a programme of races and contests of various kinds, which excited a great deal of interest. Prizes were donated by the following Chicago wholesale houses and representatives of Hardware manufacturers, several concerns contributing two or more prizes: C. Sidney Shepard & Co., E. C. Atkins & Co., Hibbard, Spencer, Bartlett & Co., Ranney Refrigerator Company, Geo. M. Clark & Co., S. Lyons, Schneider & Trenkamp Company, Geo. W. Trout & Co., Landers, Frary & Clark, Jacob J. Vollrath Mfg. Company, Bullard & Gormley Company, New York Belting & Packing Company, Brand Stove Company, Forest City Auger Bit Company, Geo. H. Bishop & Co., Barler Mfg. Company, L. Gould & Co., Geuder, Paeschke Mfg. Company, J. L. Perkins & Co., Cole Mfg. Company, the *American Artisan*, Lawton Cutlery Company, and Wells & Nellegar Company.

Special prizes were also donated by the Reading Hardware Company and the Ohio Tool Company.

Among the contests was a baseball game between the jobbers' representatives, captained by Geo. W. Trout, and the retailers, which was won by the jobbers with a score of 10 runs to 9.

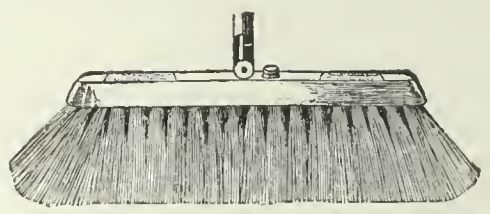
The Chicago wholesale and manufacturing interests were well represented. Hibbard, Spencer, Bartlett & Co. were represented by R. J. Blum, J. Guldeman, J. H. Tieke, W. F. Waller, J. S. McDougall and A. Fritchie. C. Sidney Shepard & Co. were represented by G. L. Lacmmar and J. F. Lethen. Wells & Nellegar Company were represented by Louis Pegelow and Judson Fuller. Geo. W. Trout & Co. were represented by Geo. W. Trout, W. F. Puls, Andrew Dickson, Otto Ollendorff and Adolph Hassman.

Among other salesmen present were the following: E. O. Geschwind of Landers, Frary & Clark; John J. Sinzich of Geo. H. Bishop & Co., W. C. Matthews of the Reading Hardware Company, Thomas Bowler of the Lawton Cutlery Company, Wm. G. Miller of the Ohio Tool Company, W. B. Lyman of the Brand Stove Company, S. M. Perrigo of C. M. Avery & Co., Harry J. Searles of the J. L. Morris Stove Repair Company, M. B. Widener of the Cook & Van Evera Company, F. H. Warren and P. J. Hennessy of the Michigan Stove Company, J. F. Cannon of the New York Belting & Packing Company, A. C. Ohlendorf of the United States Steel Lock Company, W. S. Cutler of the Ranney Refrigerator Company, J. H. Batchelder of Geo. M. Clark & Co., Chicago; F. W. Cunningham of Manufacturers' Stove Repair Company; C. J. Fagen, Domestic Plating Works; Chas. F. Johnson and Hugo Langner, with T. C. Cunningham; Fred. E. Rebmann, L. Gould & Co., Chicago; F. H. Suter, Edwin Hunt's Sons; Carl Vollrath, Jacob J. Vollrath Mfg. Company, Chicago.

W. H. Bennett, manager of the Chicago branch of the Reading Hardware Company, was one of the leading spirits in stirring up entertainment and enthusiasm. He presented everybody with a good luck pocket piece, consisting of a 1-cent coin with an aluminum rim bearing good luck emblems and appropriate lettering.

The World's Only Sanitary Dustless Floor Brush.

The accompanying illustration represents a dustless floor brush placed on the market by the Milwaukee Dustless Brush Company, 121 Sycamore street, Milwaukee, Wis. The brush is designed to lay the dust while sweeping instead of raising it, so as not to damage the stock in a store, the furniture in a room, or settle on the floor again. This result is accomplished by the use of kerosene oil to prevent the dust rising. The brush is made of good bristles, inserted in the center of which is one row of a special fiber which, it is shown, readily absorbs and holds kerosene oil. The oil supply is carried in a metal reservoir in the top of the brush, which is so arranged as to keep the fiber constantly moist when the brush is in use, the feed being regulated by opening or closing the cap through which the reservoir is filled. The wood surrounding the reservoir is chemically treated to prevent it absorbing any of the oil. The dust is collected by means of the oil in small pellets, which can easily be taken up by a dust pan in the usual manner. The brush, the manufacturers state, can be used on any kind of floor or carpet, as it improves and hardens floors and cleans and brightens carpets. The kerosene is referred to as destroying the disease breeding germs carried by dust, and as killing moths, fleas or other insects on the floor or carpet. The brushes are made in a number of sizes to suit various requirements.



The World's Only Sanitary Dustless Floor Brush.

BLACKWELL HARDWARE COMPANY have lately engaged in the retail Hardware, Stove, Tinware, Agricultural Implement and Vehicle business in Blackwell, O. T. The members of the firm are W. H. Michael and E. F. Mathis. The former was for many years with D. M. Osborne & Co., the last ten years as general agent and manager of their Denver, Col., house. From October 15 last to June 1 he acted as general agent at Wichita, Kan., for the Acme Harvester Company of Peoria, Ill. Mr. Mathis is from Monument, Col., where he was formerly engaged in ranching, &c.

The Iron Age Removable Leaf Price Book.

The David Williams Company, 232-238 Willlam street, New York, have just added to their comprehenslve line of hardware price books long on the market a price book with removable leaves, as here illustrated, which is especially suitable for store or office use. This book is arranged for conveniently

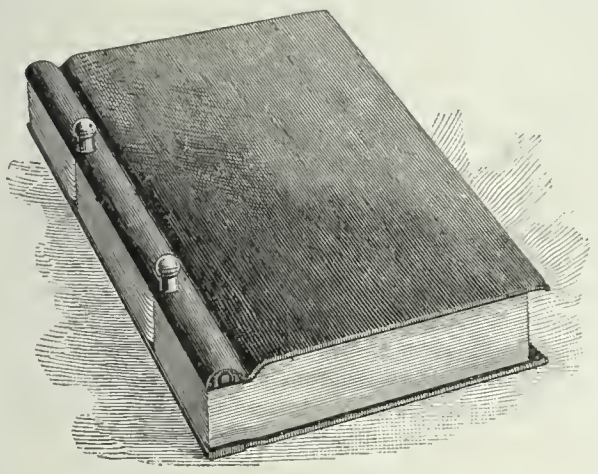


Fig. 1.—The Iron Age Removable Leaf Price Book.

and expeditlously recording prices and quotations, and will be known as The Iron Age Price Book I. The book ls 10 x 10 lnches square, has 250 leaves (500 pages), and its capacity can be increased indefinitely at the will of the owner. The covers are made of stout flexible leather of enduring quality, the upper cover having a rigid half round back, 1 inch wide and ½ inch thlck, through which two ⅜-inch nickeled brass posts, firmly secured to a somewhat similar back on the bottom cover, pass, secured at the top by milled thumb nuts. In Fig. 1 will be seen the square recessed head of a

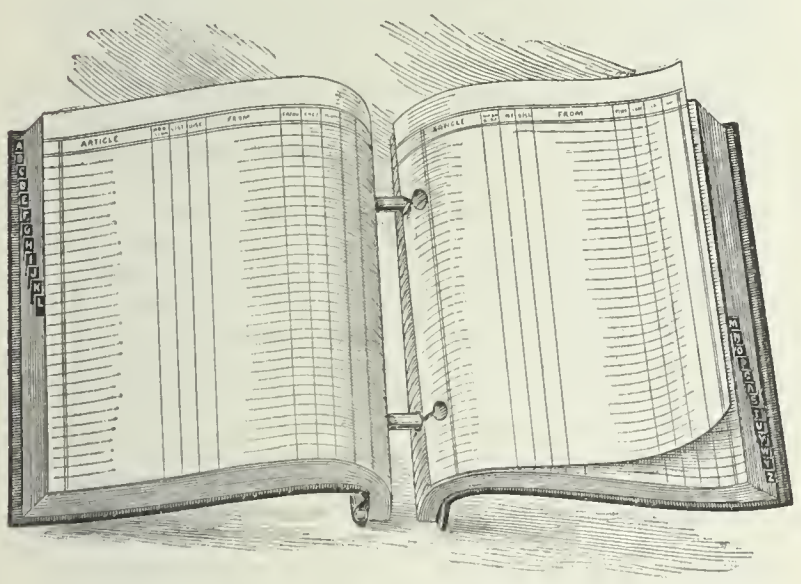


Fig. 2.—Showing Manner in Which Leaves Are Inserted or Removed.

lateral screw ln the oval back, which is operated by a long slender key, furnished with the book, for locking the cover on. By means of the extension posts, which are supplied in sections 1 inch and ½ inch long, the book can be made to hold any reasonable number of extra leaves, by removing the cover and inserting one or more as occasion requires.

The leaves are ruled on both sidos, and there are permanent leaves having projectlng leather alphabetic index tabs to properly divide the alphabet. The columns for entries are headed with the words: Article, No. or sizo, List, Discount, From, Freight, Cost, Retail, Job, with a blank column over 1 inch wido at the extreme back. The sheets are so prepared at the back that when the book ls open a flat surface is provided, which greatly facilitates the making of entries.

A striking feature of the book is the ease with which extra leaves can be slipped in at any point, making its capacity adjustable and elastic for any one's requirements, even if no two users' wants are the same. The book is sold for $12.50 each and extra leaves can be obtained for $1.50 per 100.

Monongahela Valley Retail Hardware Dealers' Association.

This association issues its constitution and by-laws in convenient pamphlet form for circulation among retail merchants and also jobbers and manufacturers with whom they have to do. It refers conspicuously to the way in which the trade of the retail Hardware dealer is encroached upon by the catalogue house and department store, and calls upon the trade to unite their efforts against these evils, making the point that organization is the keynote of success in modern commercialism. The following preamble and resolutions are given place in the pamphlet:

PREAMBLE.

The Monongahela Valley Retail Hardware Dealers' Association is intended to include in its membership all legitimate Hardware dealers throughout the Monongahela Valley and vicinity.

The trade recognize the desirability of an organization and the need of closer social and business relations, realizing that much unjust competition arises from misunderstandings and imaginations therefrom.

We also feel the need of some protection from the indiscriminate sale of goods by manufacturers and wholesale houses to those who are not in the regular trade and arc not entitled to recognition as Hardware dealers from manufacturers and jobbers.

RESOLUTIONS.

Whereas, Some manufacturers and jobbers in general Hardware, Stoves, Tinware, Paints, Leads, Oils, Varnishes and kindred lines pertaining to the Hardware business persist in selling their goods through illegitimate channels, placing us toward our customers in the light of extortioners and causing a general demoralization in the retail Hardware trade,

Resolved, That the members of this association confine their purchases of Hardwarc, Stoves, Tlnware, Paints, Leads, Oils, Varnishes and kindred lines as far as practicable to manufacturers and jobbers who sell goods to firms only that are legitimately engaged in the retail Hardwore business as defined in these resolutions.

Resolved, That any manufacturer or jobber in Hardware, Stoves, Tinware, Paints, Leads, Oils, Varnishes and kindred lines, furnishing net prices or discount sheets contrary to the foregoing resolutions either by themselves, employees or agents, shall be considered as disapproving of these resolutions.

Resolved, That it is injurious to the retail Hardware dealers of this association for manufacturers and jobbers to make estimates or quote net prices direct to the consumer for Hardware, Tinware, Paints, Leads, Oils, Varnishes entering into the construction of buildings or for private use, and that all such estimates or net prices shall be made through a legitimate Hardware dealer.

Resolved, That every member of this association constitutes a committee of one, and is expected to report to the proper officers any violations of these resolutions.

Resolved, That these measures are just and necessary for our welfare, and it is expected that the rigid enforcement of the resolutions will be carried out.

LETTER TO JOBBERS AND MANUFACTURERS.

With a view to inducing manufacturers and wholesale Hardware houses to sell only to legitimate Hardware dealers, the following letter has been prepared and is being sent out by members of the association:

An organization of the retail Hardware dealers of the Monongahela Valley has been formed under the name of the Monongahela Valley Retail Hardware Dealers' Association.

We inclose you a copy of the constitution and by-laws of this association, and respectfully ask that you carefully examine same. We believe that this examination will result in your giving the cause your hearty sympathy, and that you will co-operate with us in working together for our mutual good.

The aim of the association, which we believe is a legitimate one, is explained in the preamble to the constitution. The condition of the retail Hardware business at the present time is, to say the least, alarming, and the future outlook is anything but bright. What

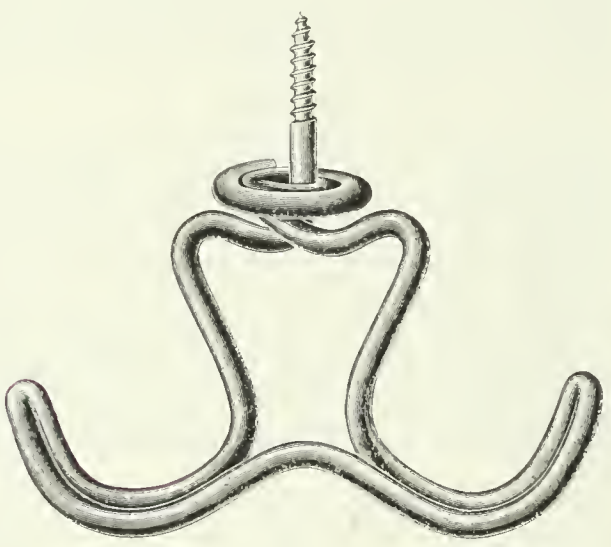
we ask, and we feel that we are not asking too much, is that manufacturers and wholesale Hardware houses sell to none but legitimate retail Hardware dealers.

Further, the members of the association have resolved to confine their purchases as far as practicable to manufacturers and jobbers who co-operate with us in this matter, and who sell to none but legitimate retail Hardware dealers.

We feel confident that a thorough investigation of existing conditions will prove that our position is justifiable, and that the Hardware manufacturers and jobbers will gladly give us their support. Our cause is spreading throughout the State, and in order to concentrate our efforts along this line, we hope in a short time to have the retail Hardware dealers of the State united in one association for the betterment of the trade, realizing that in union there is strength.

Jenckes Ceiling Hook.

E. Jenckes Mfg. Company, Pawtucket, R. I., for whom John H. Graham & Co., 113 Chambers street, New York, are direct representatives, have just put on the market the Jenckes ceiling hook, as here illustrated, which can also be used for many other purposes. The extreme dimensions of it are, width 3¼ inches and hight



Jenckes Ceiling Hook, Three-quarters Size.

2¾ inches. The main difference in coustruction from somewhat similar hooks is the twisted coil or rosette of wire at the base of the screw, which gives a good backing against whatever material it is screwed into. It is finished in copper, japan and bronze, packed one-quarter gross in a box and six gross in a case.

Stove and Hardware Dealers.

In a notice of the annual meeting of the "Vulcan Club" of Cleveland, Ohio, appearing in our issue of July 13 an unfortunate omission was made in presentiug the names of the newly elected officers. Instead of "E. F. Dettlebach" of the Dettlebach Plumbing & Heating Company having been elected secretary, as therein stated, E. F. Bohm, who has filled the office for the past two years, was re-elected thereto, W. H. Dettlebach being re-elected to the position of treasurer of the organization.

Some time ago announcement was made of the intention of Sidney Shepard & Co. of Buffalo, N. Y., to remove to a new plant which is to be built on the outskirts of that city. We are now informed that plans for the building are uow out. The principal factory is to be three stories high aud 138 x 80 feet. Other buildings will be 60 x 204 and 40 x 40. A boiler house and engine room will also be built. The concern are manufacturers of Tinware, Stamped and Japanned, and Aluminum Ware.

F. F. Wehsner has disposed of his Hardware, Stove and Farm Implement business in Wautoma, Wis., to John Sleath and Halbert Hanson, who will continue at the old stand under the style of Hanson & Sleath.

Callaghan & Richardson Company, Reed City, Mich., are about to put in a full line of Hardware and will appreciate copies of catalogues and price-lists relating to the general line, as well as Steel Ceilings, Roofing, &c.

M. Seller & Co., who are dealers in Stoves, Crockery, Glassware, Cutlery, Lamps, Tinware, Wooden Ware, &c., with stores at Portland, Ore., aud Seattle and Spokane, Wash., are about to add a line of Hardware to their stock at Portland, and will value catalogues, price-lists, &c. They will conduct a strictly jobbing business and expect to handle a general line of Hardware.

A. Cording & Son have succeeded Miller & Jones, Hardware and Stove merchants, Gibson City, Ill.

Hall & Torrey have succeeded Hedge & Hall in the wholesale and retail Hardware, Stove and Agricultural Implement business in Rockland, Mass.

Mobile Hardware Company, Mobile, Ala., have been incorporated with a capital stock of $10,000. The interested parties are G. P. Martin, G. A. Tonsmeire and J. A. Lewis. They will conduct a wholesale and retail business in Shelf and Heavy Hardware, Stoves and Tinware and Agricultural Implements.

In pursuance of an order of the Superior Court, Henry G. Newton, New Haven, Conu., receiver of the Merriam Mfg. Company of Durham, Conn., makers of Tinware, who have beeu in the receiver's hands for seven years, sold the plant of the company at auction last week. The plant was bought in by Mr. Newton, representing the Durham creditors. It is understood that the factory is to be reopened at once and run under the old name, the courts having given permission to retain the name.

The Manitowoc Aluminum Company of Manitowoc, Wis., have opened a New York office and salesroom at 15 Whitehall street. The office is in charge of Charles B. Corwin, who will pay particular attention to the export trade.

James McGolpin, manufacturer of Tinware, Toronto, Canada, announces that he has removed his manufacturing plant to larger and more commodious premises at 156 to 162 Duke street, Toronto. Having added improved machinery and thereby increased his facilities, Mr. McGolpin is now in position to supply Tin Cans and Lard Pails in addition to the lines of Tinware formerly carried.

The National Enameling & Stamping Company are offering to the trade a high grade line of White and White Enameled Steel Ware equal in every respect to the imported product, and also a line of Brown Brilliant Enameled Steel Ware. These goods are made by the compauy's factory at Bellaire, Ohio, which has always been celebrated for the high grade White Lined Enameled Ware produced there. Nothing but these two lines will be manufactured at this factory, and in this way it is expected that orders will be filled complete. To those who are not familiar with the Brown Brilliant Enameled Steel Ware the factory will be pleased to send samples, and all inquiries will receive prompt attention.

A letter from D. M. Steward, Chattanooga, Tenn., contains the announcement that he has purchased the entire plant of the D. M. Steward Mfg. Company. The business will be continued by him under the same name and without any change in management, as Mr. Steward has been for a quarter of a century president and manager of the old company. He solicits a continuance and extension of patronage. A large plant is operated in Chattanooga, making Lava Electric Insulators, Gas Tips, Slate Pencils, Dustless School Crayons and Crayons for rolling mill and metal work, as well as Tailors' Chalk and Soap Stone Pencils; Talc Powder and Foundry Facings are other products of the plaut.

The Star Electric Gas Lighter Company of New York City have been incorporated with a capital of $25,000. The directors are Jacob Harzfeld, Julius Wielar and Siegfried Scherk, New York City.

Patrick H. Kelly, president of the Kelly Boiler & Sheet Iron Works, New Orleans, La., died at his home in that city on July 8 at the age of 47 years. Mr. Kelly organized the company that bears his name in 1897.

International Heaters at Chicago.

The International Heater Company, Chicago, have placed in their sample room at 48 Dearborn street specimens of several new productions just brought out in the company's foundries. Among these is a new horizontal section boiler designed for both steam and hot water, which is named the Carton F series. Two sizes are shown. This boiler has a round fire box, the special feature of which is the large amount of direct overhanging surface. Circulars and quotations referring to this boiler will shortly be ready for distribution to the trade.

Another new product shown is the Palace Regent warm air furnace for hard coal and wood. This furnace is one which has already acquired a fine reputation, but has been remodeled and in its new form is expected to attain still greater popularity. It has been fitted with a very large double feed door, which will enable large chunks of wood to be used. This furnace has a steel radiator with triple radiating faces, furnishing a large area of effective heating surface so arranged as to provide for the warming of an immense volume of air. The radiator has a very long revertible fire travel. An automatic gas damper in the radiator opens automatically whenever the pressure of gas in the combustion chamber becomes unusually heavy, thus obviating all danger of explosion and the discharge of gas into the cellar. The fire pot is constructed in two pieces and is both deep and straight. The company report both their boiler and furnace business very active.

Annual Outing of Wilkes-Barre Master Plumbers.

On Saturday, July 20, the Master Plumbers' Association of Wilkes-Barre, Pa., enjoyed their annual outing at the picnic grounds on Stop Cock Island, in the Wyoming Valley. The day was perfection in the way of weather, with cloudless skies and thermometer ranging below 80. In the attractive surroundings of the picnic grounds the members of the association and their invited guests enjoyed a delightful day. Among the attractions offered was a series of sports, which were greatly enjoyed, the sack race and fat men's race proving particularly interesting, while the 50-yard dash between Hazleton and McKnight, the two largest men present, was closely contested, the latter winning by a nose. Hazleton claimed that the vichy he drank before the race was carbonated with less force than that imbibed by McKnight, in this way explaining his defeat. The commissary department was in charge of John Connor, chairman; G. T. Farrell and Charles Liem. Charles Travers officiated as *chef*, and his broiled chicken and steamed clams were found highly palatable.

The party was honored by the presence of George Shiffer, outside superintendent, and Arthur Casweli, inside superintendent of the D & H mines, who thoroughly enjoyed the games. From Kingston came the veteran plumber, H. F. Johnson, Sr., who has attended former annual outings, also Willis H. Miller. The following members from Wilkes-Barre were present: Charles Erath, Richard Turner, Peter Forve and Dan Shevlin, J. H. Campbell, Joseph Schuler, Barney O'Rourke, William Casier, Charles Liem, John Connor, Frank Fluegel, James Gorman, Alfred Speicher, Martin Hochreiter, Frank Babb, Herman Wagner, Henry Spangleberger, J. S. Monks, and last, but not least, Plumbing Inspector Griggs.

Garry Farrell of Plains, one of the busiest members, who was the first to arrive and the last to leave, because he lived close by, umpired a closely contested game of baseball, captained by the two stout men, Hazleton and McKnight. The game was won by Hazleton's side by the close score of 17 to 16. Among the travelling men who assisted in the day of enjoyment were the following: Thomas F. Hazleton, representing Owen and Salter of Philadelphia; John W. McKnight, representing Ford & Kendig of Philadelphia; Thomas Berkstresser, representing Fieck Brothers, Philadelphia; James Evans, representing the Pittston Stove Company; V. H. Arnold, the Pittsburgh tin plate man, representing Follansbee Brothers Company, New York; Luke Horan, with Foote & Shear of Scranton, and Charles Morrison, connected with the Richmond Stove Company of Norwich, Conn.

Quality of Range Boilers.

It is not uncommon in business as well as in domestic life to hear remarks about the excellent quality of things in the old fashioned times. Those who frequently have had occasion to renew range boilers in their properties since steel has been largely used in the construction of these useful articles are very prone to lament the lack of quality in their later purchases. With a view of furnishing boilers equal to the best that ever could be purchased, L. O. Koven & Brother of 50 Spruce street, New York, have a large factory building in Hoboken, N. J., equipped with machinery especially designed for the work. With the machinery and workmanship under their control, the firm, by careful inspection and testing, can be sure that everything that passes out of their hands is strictly first-class. The concern have also continued the use of iron in their goods. When steel quite generally supplanted iron the house experienced some difficulty in getting iron of the quality they desired. In order to secure material which met their approval it has been their custom for a number of years to place early in the season large orders with the rolling mills, and to have the iron rolled to their specifications, both as to dimensions and as to quality. This fact is well known to many in the trade, as is also the care with which the firm have labored to keep up the quality of their productions, and this has contributed in no small degree to the popularity and the success of the Koven boi er.

New York City Notes.

Trade is very brisk at present in all branches of the business in Manhattan and material is not coming fast enough to suit many. The two journeymen's organizations have fewer men out just now than for a long time past. Bronx Borough is not so busy, as but few new apartments are being put up there, owing to the new tenement house law.

* * *

Among the busy plumbers are Harry Spencer, with an apartment on 101st street, East of Broadway; J. G. Collins has four tenements on 101st, east of Second avenue; W. H. Speiman & Co. have a private residence at 56 to 60 East Eighty-eighth street; John Tucker has a residence on corner of Fifth avenue and Eighty-fourth street; Geo. F. McQuillen has a large apartment house on West Forty-third street; J. W. Unnever has seven tenements on 101st street, between First and Second avenues; Calian & Oliver have five flats on 139th street, east of Lenox avenue, and one flat on 141st street, west of Lenox avenue; and Reynolds & McMahon have a large apartment house at the corner of Park avenue and Ninetieth street.

* * *

M. F. Donohue is busy with overhauling and is plumbing the extension of Weber & Fields' Music Hall on Broadway.

* * *

Bids are now in for plumbing the new Hall of Records and it is said that the job will go to a prominent Columbus avenue plumber, he being the lowest bidder. This is the last of the municipal jobs on hand where the plumbing is in the general contract.

* * *

James Harley of Brooklyn Branch was the successful bidder for plumbing the new High School being erected on 114th and 115th streets, west of Seventh avenue, he having beaten the other competitors by a small margin.

* * *

The new Bronx Branch is growing rapidly and is getting in many members, who would not join the parent organization owing to the different conditions existing between the two parts of the city.

Hot Air Furnace Heating.*

BY C. G. FOLSOM.

The subject which I have chosen is "Hot Air Furnace Heating." The house which is the basis is in South Bend, Ind., and is exposed on all sides—no protection whatever—a frame structure thoroughly built on a stone foundation (what we term, locally, field stone) with cement mortar, and is a two-story residence with an attic. The first story is stone veneered 6 inches thick, as may be seen in the picture, Fig. 1. The buildings of this description in our town are almost all

Hot Air Furnace Heating.— Fig. 1.—General View of House.

isolated and are not constructed on the same plan and with the same idea that city buildings are constructed, where the ground that they are built on is worth considerably more than it is in our city.

The house, the plans of which are given in Figs. 2, 3 and 4, is well arranged as a residence and very convenient. It is the work of Freyermuth & Mourer, architects, of our city. The structure, as it now stands, cost about $6000. I contracted for the heating of this building at a disadvantage, for the frame was up and inclosed, chimney was built, and it was left me to arrange as best I could. The owner wanted the work the best that could be had under the circumstances and was willing to pay for it.

The furnace used was a tubular construction with 26-inch fire pot and an open labor saving grate. It will be noted that there are 14 pipes from this furnace, which occupy nearly all of the available space on the top of the furnace. It will also be noted that the pipes are fully as large or larger than those very often used under more favorable conditions. The stacks are larger than are usually placed in a building in our part of the country, being 4 x 12 inches, which is the space that is between the studding. There is 30,000 cubic feet to heat. The manufacturers' estimate is 30,000 to 50,000 cubic feet for the heater used. There is an inside lining of tin all around inside of what is termed the casing, which is of galvanized sheets, and asbestos sheets are pasted on between these casings.

The piping is of bright charcoal tin, IX, and the joints are double seamed. The wall stacks are of bright tin and are double, except two of them, which are covered with three thicknesses of asbestos paper pasted on. At the base of each stack there is a boot of extra size, also of bright tin. The longest round pipe from furnace is 26 feet 8 inches and is 9 inches in diameter. This connects with the stack to the bathroom on the second floor. This stack has an outlet or register 5 feet from the floor, as there was no place in the floor for the register. The shortest pipe is about 8 feet long and 10 inches in diameter. The round hot air pipes rise about 1 inch for every 10-foot length of pipe.

*Paper read at fourth semiannual meeting of American Society of Heating and Ventilating Engineers, Chicago, July 13, 1901.

The furnace is over a pit 24 inches deep, and the air duct is formed by a 4-inch brick wall on two sides of a trench that is 24 inches deep and wide enough to have a capacity of 720 inches.

The area of a 12-inch pipe is 113 inches and in three of them there are 339 square inches.

The area of a 10-inch pipe is 78 inches and in three of them there are 234 square inches.

The area of a 9-inch pipe is 63 inches and in eight of them there are 504 square inches, making the total area of the combined hot air outlets 1077 square inches.

There is nearly two-thirds as much cold air inlet as the combined area of the 14 pipes that carry the hot air from the furnace to the several rooms in the house.

In the dining room there is a register face, 28 x 28 inches in size, that takes the return air from the hall, two parlors and the dining room. The outside air that is used is taken through a window in the basement up near the joist and is conducted down to a duct underground. The return air duct is attached to this outside air duct from the window, so that by turning a damper, which has a handle on the outside of the duct, the air can be used either from outside of the house or an inside circulation can be used.

Now there are also return air ducts, made of bright tin, from every room in the house. They connect with this inside duct for the circulation of the partly

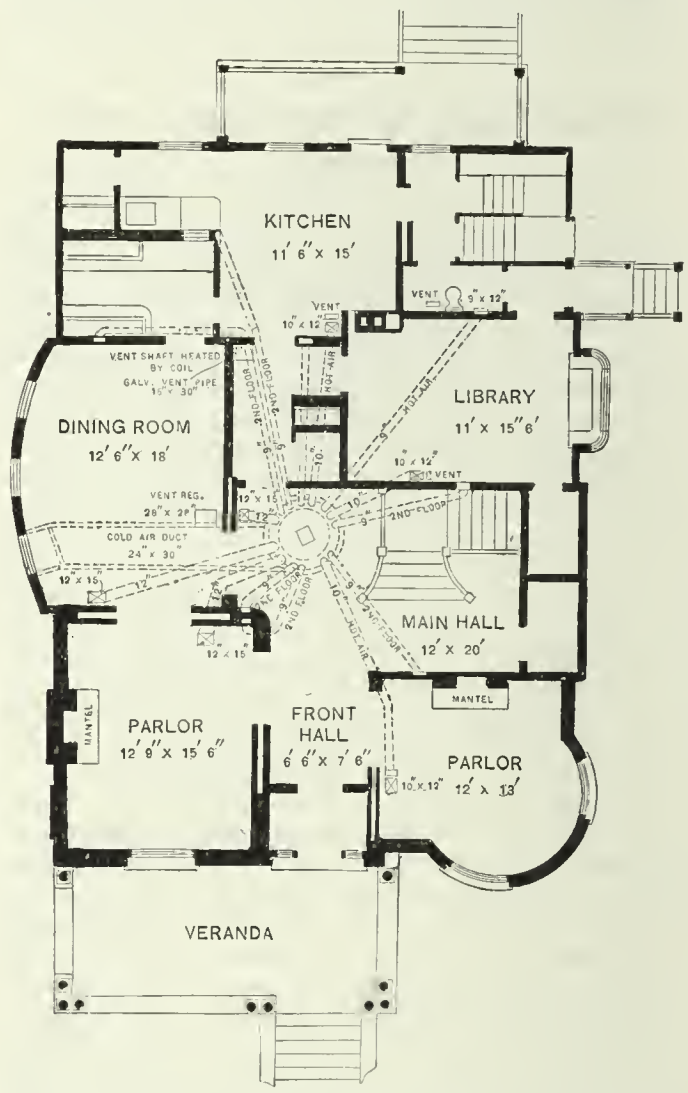


Fig. 2.—Plan of First Floor, Showing Arrangement of Hot Air Pipes in Basement.

heated air. These bright tin pipes are three-fourths the capacity of the hot air pipes from the furnace to the different rooms.

By the side of the feed door in the furnace there are two 1-inch holes for pipe connections with a water heater. These water heating pipes extend into the furnace over the fire and are for the purpose of heating a coil in a galvanized iron stack that extends from the basement up into the attic, where it is carried over into a large chimney flue. This stack is for the purpose of ventilating the two closets (one on the second floor and one on the first floor). A tank in the attic, which is filled with rain water, is connected to supply the hot water

coil in the galvanized iron stack, which is used to exhaust foul air from these closets.

Five examinations of the temperature of the rooms of the house were made in January, February and

Fig. 3.—Plan of Second Floor.

March. The average was 69 degrees. All but one was made in the morning and that one was at 4 p.m. The fuel used was hard coal, and not 10 tons were used for all the fire from October 29, 1900, to May 1,

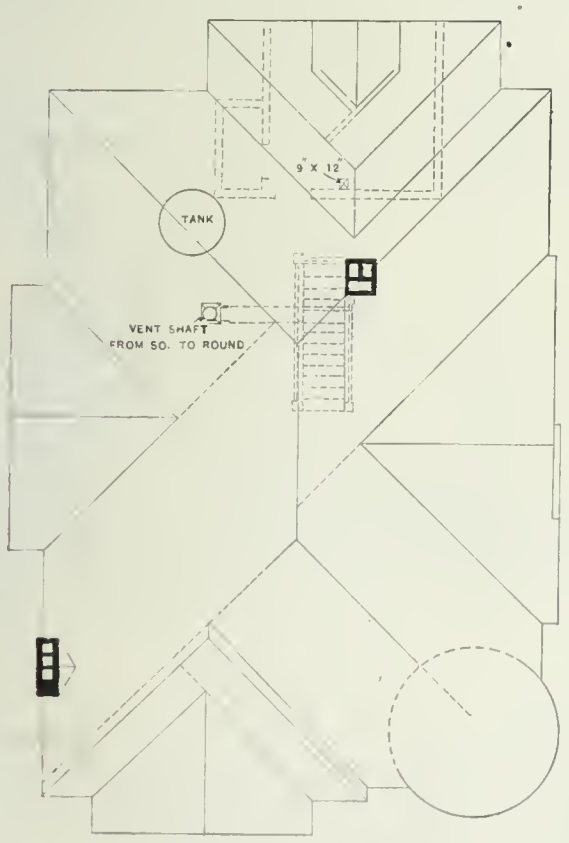


Fig. 4.—Plan of Attic.

1901. The family were satisfied with the temperature of the house. I was there when the thermometer registered 8 degrees below zero. This was the only time that I saw the fire at a white heat.

I have no way of testing the velocity of air at the register except with an anemometer, and I could not get much satisfaction from that instrument.

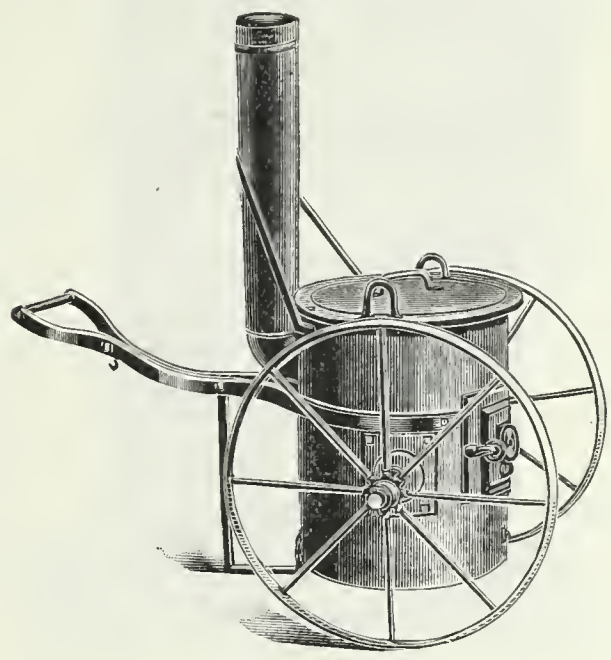
I wish to state that in drawing the air out of the galvanized stack I was surprised to find that these two small rooms were so easily heated. In the coldest weather they were the warmest. At least they were always warm.

In this house there is a small family—man and wife and two children—and the leakage into the house of fresh air was considerable. The glass surface is enormous. All of the windows are large—at least one-eighth of the entire side walls.

In ordinary practice we do not take glass surface into consideration, for we try to install a furnace large enough to overcome all that is required.

Lead Melting Furnace.

In the accompanying illustration we show the lead melting furnace manufactured by D. R. Sperry & Co., Batavia, Ill. It is adapted for use of plumbers in laying heavy cast iron drain pipe and in laying large gas and water street mains. As can be readily seen by the cut, the furnace is mounted on wheels so as to be readily



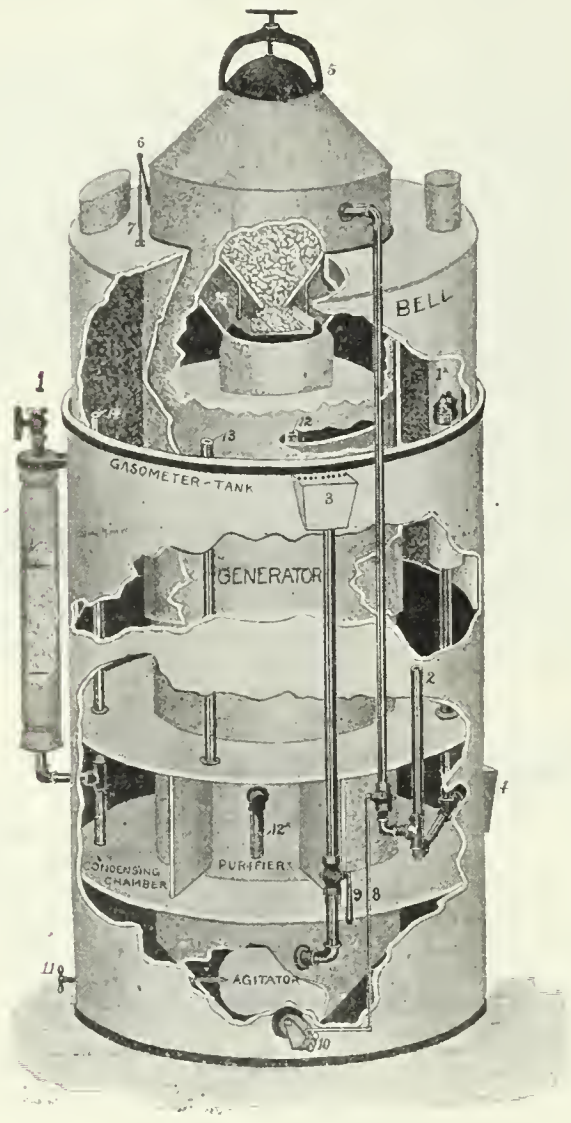
Lead Melting Furnace.

moved to the point where it is needed. It is constructed of 3-16-inch boiler steel and has a heavy cast iron fire pot inside the shell to protect it from the heat. It is provided with a grate which is arranged to dump and shake, and air is admitted to the fire through a strong fire door with a suitable draft opening. The kettle within the furnace is made very heavy and has a high inside flange to prevent the molten lead slopping over when the furnace is being moved. The kettle is also protected by a heavy steel cover. The handle provided for moving the furnace is equipped with a folding rest that locks in position, so that the furnace stands firmly on three points. The firm also manufacture the furnace without wheels, when heavy carrying loops are attached to the shell, so that it can be carried from place to place by means of two pieces of heavy pipe or iron bars.

THE organization of an association of master plumbers at Reading, Pa., was made the occasion for a very pleasant outing. Owing to the interest taken in the organization by the Master Plumbers' Association of Philadelphia that association was invited to join the Reading plumbers in an outing, which took place on last Saturday. A special train carrying 150 Philadelphia plumbers was run to Reading for the purpose. After enjoying a trolley ride through the beautiful scenery and mountains around Reading, a generous repast was served at Wildwood Park. The affair was voted by all who enjoyed it to be worthy of annual repetition.

The Drake Special Acetylene Generator.

A very popular form of acetylene gas generator is that in which the carbide is stored in a hopper and automatically thrown into the generating chamber as required. A new generator of this type is being put on the market by the International Heater Company of Utica, N. Y., which they call the Drake Special automatic acetylene gas generator. A broken view of this generator is presented herewith, from which its general operation can be readily seen. Compactness of construction is a feature, the machine being self contained, the generator, gasometer, purifier and condensing chamber being all in one tank. Owing to the large quantity of water in the generator and the small quantity of carbide which is automatically fed to it at one time the generation of absolutely cool gas is a feature. In feeding carbide it is placed in the hopper, which discharges on a flat plate or pan attached to a shaft and located just below the bottom of the hopper. When the gasometer falls, as a result of the gas which has been generated being consumed, it automatically operates the shaft, which tilts the pan or plate, and the carbide is spilled into the water. This provides a positive yet automatic feed, simple in arrangement, that is not disposed to clog or overfeed.



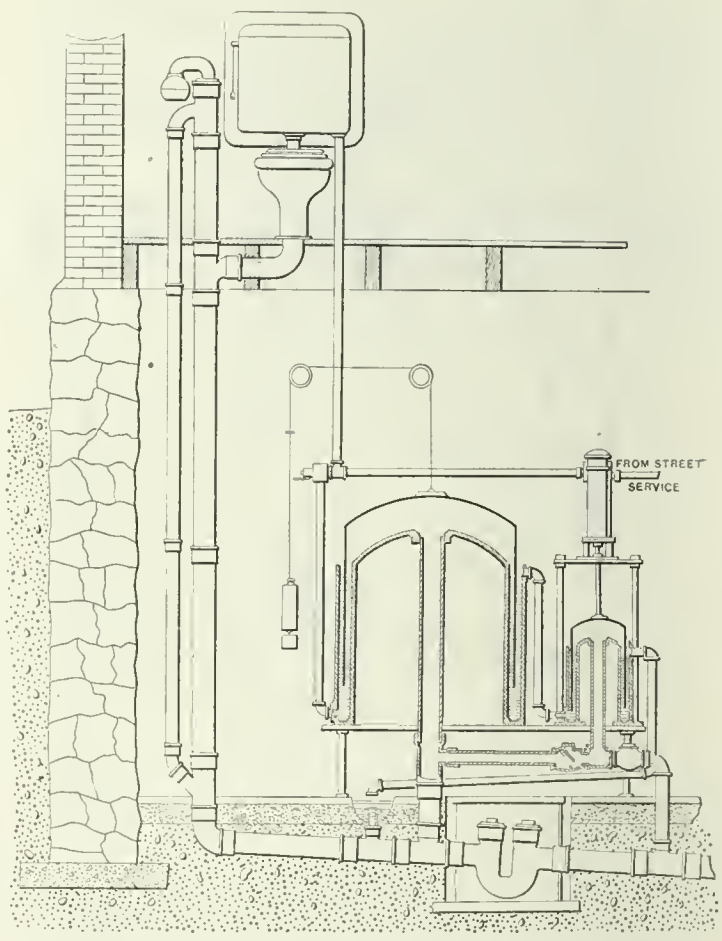
The Drake Special Acetylene Generator.

The simplicity of arrangement and construction of the generator is such that it can be readily set up without risk of making a mistake in connecting, or of a leaky pipe causing annoyance. Another advantage is that the generator can be taken entirely apart without unfastening a single bolt or screw. The condensing chamber permits every pipe in the apparatus to have an open end and to be drained directly into it, so that the chance of clogging is reduced to a minimum. Its compactness is a convenience for transportation, while making it light in handling. In operation, after the carbide has been discharged into the water in the generator the gas generated raises the gas bell, is forced to pass down through pipe 12 and enters the purifier at the point 12*x*, where, after cleansing, it rises through pipe 13 into the gasometer. From here it passes through pipe 14 into the drier and is carried to the house pipes through the service cock No. 1. Undue pressure or excess of gas is disposed of through the bell rising until the pipe 1*x* is lifted out of the water, allowing the gas to pass off freely through the open air pipe.

In the bottom of the generator there is an agitator, which by turning the handle 11 separates the refuse from the carbide and allows the refuse to be drawn off through the valve 10. It is unnecessary to take the machine apart or clean any receptacle if a pipe runs to a sewer connection. The generator is made of 20 gauge galvanized iron and all seams are either riveted or double seamed and soldered. All fittings are of malleable iron, and all connections are packed with red lead and asphaltum. To set the machine up for operation it is only necessary to connect the drier and make two pipe connections, one with the main service pipe and the other with the open air pipe for a safety outlet. The generator is made in 16 different sizes, adapted for supplying from 10 to 800 burners of ½ foot capacity, so that an apparatus suited to the number of burners to be supplied can be selected. The company have recently issued a new catalogue devoted to the Drake Special generator, which gives full detailed information.

A VACUUM PLUMBING SYSTEM.

The method of ventilating plumbing systems in general use has met with some positive objections. The fresh air inlet is often a foul air outlet, and the roof end of the vent pipes are required in the plumbing regulations of some cities to be placed at some distance from any window. Smith & Sayers of 487 and 489 Broadway, Newburg, N. Y., are manufacturing and putting on the market a patented vacuum plumbing system of their own design to obviate the necessity of both the fresh air inlet and outlet. A feature of the system, which is illustrated herewith, is an air chamber, which may be placed in the basement of a building. In connection with it is a small motor pump designed to keep the air chamber full under all conditions. It is pointed out that by its use there is no occasion for the vent pipe to extend above



A Vacuum Plumbing System.

the roof of the building, which makes a substantial saving in the cost of the plumbing work. The fixtures, whether one or many, are ventilated in the usual manner and connected with the vent stack, which terminates immediately above the water line of the highest fixture. In the operation of the fixtures the air forced ahead of the water flush can rush up through the vent pipe to the soil stack to supply the vacuum that otherwise would be created as the water passes down the soil stack, and any air that might be compressed in the horizontal drain finds its way into the "variator," as the air chamber is called. The fresh air inlet may also be connected with this variator, so that as the fixtures are flushed the air, which always passes through the drainage system, may rush into the variator when it rises to make room. After the rush of water has passed the variator connection any suction or tendency toward vacuum is destroyed by the air passing down from the variator to restore the equilibrium.

When water is drawn at any fixture, the air pump is set in operation to cause air to pass from the variator and leave it in a condition to receive any excess air that might be forced into it by flushing the fixtures. After exhausting the air from the variator, the pump continues to operate so long as water is drawn for any purpose, and air to supply the vacuum thus created enters the piping system through especially constructed valves, which are placed at the top of every waste stack, where the vent pipe connects with it. If no water should be drawn for a long time and there should be a leakage in the system to cause the variator to rise, it will, by a fall of the weight connected with it, trip the valve and put the air pump into operation. By this means fresh air is frequently drawn into the plumbing system.

It is pointed out that with this system in operation any leak in the drain pipes instead of discharging the air into the building would cause the variator to rise and fall more frequently and exhaust the air from the building through the leaks. It is also pointed out that with this system surface water from cellar washing and ice box drip may be discharged into a trap located anywhere on the house sewer, and if at any time the seal is broken the variator will rise until it comes in contact with the valve which sets the motor in operation, when the discharged water from the motor will be carried to the pipes to reseal the trap. It is claimed that this arrangement procures absolute protection against the gases of the house drain; it effects mechanical ventilation of the drainage system, avoids the fresh air inlet ventilator and the vent pipes discharging above the roof, and effects a continual test of the plumbing system without any extra cost. The firm issue a pamphlet devoted to their apparatus and their system of plumbing, which can be secured on application.

BROOKLYN PLUMBERS' OUTING.

The manner in which the day is spent by the Master Plumbers' Association of Brooklyn, N. Y., at their annual outing has much to do with the popularity of the event. The Committee of Arrangements, composed of E. Macdonald, M. F. Gleason, William Brown, G. W. Smyth, Eugene Kelly and William Eirman, arranged this year for one of the large summer outing barges to transport the party to Donnelly's Grove at College Point, L. I. Embarkation was made from the Bridge Dock in Brooklyn on Wednesday at 9 o'clock sharp, Brooklyn time, which turned out to be 11 a.m., Eastern time. This is a customary delay and is pleasantly utilized in greeting the plumbers, their wives, daughters and sweethearts, as they assemble, and it is by no means the least pleasant feature of the day's outing. The journey up the river, passing between the two cities, by the numerous islands and through Hell Gate, has much to attract attention. A remarkable feature is the passing under the Brooklyn Bridge and the new East River Bridge, which latter structure on the day of the outing was pronounced by the engineer safe for foot passengers. Two ladies passed over the foot path for the first time.

Arriving at the grove, after breakfast was disposed of, all were eager for seats in the grand stand to witness the baseball match between the plumbers and the drummers. This year the plumbers were successful in taking their opponents into camp. Swimming races, foot races, sack races and other outdoor games were thoroughly enjoyed by the contestants and spectators, while good music was provided and many enjoyed the dancing in the pavilion. It is worth noting that in one of the shooting contests it was necessary for one of the contestants to make a bull's-eye in order to win. The spirit of mischief tempted him to shoot at a target with a larger bull's-eye, but his mirth interfered with his skill and apparently the target that he was shooting at was missed entirely. When the drum was beaten to announce that dinner was about to be served there was no difficulty in getting the party to fall in line for the fine repast served by Mine Host Donnelly.

Among the guests were members of the different city departments in Brooklyn, and Isaac J. Brown, A. H. Brown, T. A. Hill, B. F. Donohoe and Philip Brady of the Manhattan Branch of the Master Plumbers' Association of New York City. The supply houses of Brooklyn and New York were also well represented. The trip home by moonlight was made interesting by the distribution of the prizes to the winners of the different contests. When the party reached the dock all joined in thanking the Committee of Arrangements for the thoroughly enjoyable day spent.

Heating and Plumbing Notes.

Seestedt Brothers of Romulus, Mich., have purchased the buildings of the Columbian Wire Works in that town and will fit them up for the manufacture of Bathtubs. These buildings will be connected with their old factory by means of a viaduct across Howard street. The present factory will be used for the manufacture of Bathtub Rims, Water Closet Seats and Plumbers' Wood Work. These improvements in their facilities will increase the capacity of the firm's plant and enable them to turn out 100 finished Bathtubs per day.

Locke Brothers of Williamstown, Mass., are erecting a new building in connection with their plumbing establishment in order to secure increased warehouse facilities.

The plumbing establishment of E. D. Hornbrook & Co., 1212 Main street, Kansas City, Mo., was visited by fire on July 16, doing damage to the extent of $800.

Gorman & Millett, Wilkes-Barre, Pa., report that they are busier now than at any time for five years past. Among contracts recently finished by them is one for the plumbing, drainage and putting in an extensive water supply system at the Ganoga, Pa., Lake Hotel, also remodeling the Glen Summit, Pa., Hotel. They have just done the plumbing at three large cottages at the summer resort at Harvey's Lake, Pa.

The Monash-Younker Company of Chicago, Ill., with branch at 51 Centre street, New York, are sending to the steam fitting trade a hanger advertising their specialties. One side shows a picture of the company's main office and factory at 201 and 207 South Canal street, Chicago, and also the extensive and varied line of Steam Air Valves made by the house. The head of the line is given to their Perfected Duplex. Valves adapted for drip lines and for the air lines of vacuum systems are also displayed. Two styles of Hot Water Radiator Air Valves are shown, and sectional views are presented of two styles of Steam Traps made by the company. Radiator Shields and Steam Pressure Regulators complete the line of illustrations. On the back of the hanger is a complete price-list of the goods illustrated, giving the capacity of the Steam Traps and information in reference to the Pressure Regulators made by the concern, as well as instructions for use of their Radiator Shields.

The plumbers at Cambridge, Ohio, in future will receive $3 for a nine-hour day and the gas fitters $2.25.

The Vanderman Heating & Plumbing Company, Willimantic, Conn., are sending to the trade a four-page circular devoted to Vanderman's Adjustable Soil Pipe

Fitting. This Fitting is designed for use where for any cause a section of the Cast Iron Soil Pipe must be removed, either from damage or to allow a new fixture to be connected. The bell end is made with a coarse thread to receive a thread on the spigot end. This enables the adjustable fitting to be screwed closely together for insertion and connecting the main Soil Pipe and the Soil Pipe Fitting used for the new fixture, after which the joint is calked in the usual manner. These Fittings are proving very popular with the plumbing trade, as a better job can be made and in much less time with much less labor than by the old method of cutting off a section of Pipe and breaking two or three joints so as to have the stack loose enough to allow it to be sprung into line after several rigid parts are fitted. The circular gives the sizes and prices of the Fittings and also some special rates when purchased in sufficient quantities.

THE authorities of Attleboro, Mass., are enforcing the plumbing regulations in order to prevent invasion by Rhode Island master plumbers to do work in the city, without having passed an examination or taking out a license. It is claimed that the invaders interfere with local trade by adopting the rule of "half doing for half price." Much of the work done is said to be in violation of the regulations and inimical to the public health.

BARNDT & GEIGER of Buffalo, N. Y., have secured the contract for plumbing the Lafayette High School in that city at their bid of $13,000.

CUYLER & MOHLER, Baltimore, Md., manufacturers of Plumbers' Supplies, have completed plans for the erection of a four-story warehouse at the corner of William strect and Armistead lane.

JOB THORP, Westerly, R. I., has a contract for plumbing the residence of James Howard, and also for heating it with a Hot Air Furnace. He has a contract for the Copper work on a new stable for C. Goddard and will also do the plumbing and install a Hot Water Heating System in the residence of Peleg Barber. He has used Kelsey Furnaces in the residences of Arthur Perry and George Everett.

THE plumbing business in Wilmington, Del., is enjoying a boom through the action of the Board of Health requiring property owners to connect the drains on their premises with the city sewers.

THE WALSH BOILER & IRON WORKS, Springfield, Mass., have the contract for Stand Pipes which they are erecting in Buffalo and Copenhagen, N. Y.

TRAFTON & MUIRHEAD, Pawtucket, R. I., have the contract for plumbing the Woodlawn Baptist Church. The F. L. Smith Plumbing & Heating Company have the contract for the steam heating and will use two Boynton Boilers.

THE KELLY & JONES COMPANY of Pittsburgh have bought another piece of ground adjacent to the Singer, Nimick & Co. building on Water street. The two present buildings will be torn down and a large building erected, to be used as offices and warehouse by this concern.

THE contract for heating the Holly Institute at Salem, Va., and supplying the institution with water was awarded to the Salem Heating Company. The work is being done under the superintendence of R. H. Carper. Mr. Carper is also superintending the installation of a Heating Plant and plumbing at the Roman Catholic school at Wytheville.

JAMES MACKAY of the Kellogg-Mackay-Cameron Company, Chicago, arrived home on the 22d inst. after an absence of nearly three months, during which time he traveled over the entire Pacific and Rocky Mountain country. He found the heating business in very good condition everywhere, except possibly in Southern California. The heating contractors of Montana are extremely busy, and some large buildings are now going up in the city of Butte, which will require a great deal of heating apparatus. The State authorities of Idaho and Washington are erecting a number of public institutions, which will also need a great quantity of heating appliances.

THE AMERICAN RADIATOR COMPANY, Chicago, are enjoying a large volume of business. Their customers are placing orders very freely. Building jobs are now getting to a point where heating apparatus must be considered. Consequently this causes plans which have been talked about to develop into accomplished facts. They look forward to a heavy fall trade. A new boiler catalogue which is to be a very fine publication is in course of preparation and will shortly be issued.

THE STANDARD MFG. COMPANY, Pittsburgh, Pa., recently secured an order from England to furnish the British Westinghouse Electric Company with over 2000 Enameled Lavatories. This order was secured in competition with several other American manufacturers and also with the English and Continental plants. The Pittsburg concern secured the order owing to the fact that they have better facilities than any other competitor in the world. Their designs are more modern and their goods are the best that can be secured. It is understood that this order will be shipped in its entirety before the first of the year. This is a feat that could not be accomplished by any other concern in the business.

A LETTER from the Utica Heater Company, Utica, N. Y., informs us that the Chicago Heater & Supply Company of 54 Dearborn street are Western agents or managers of the Utica line of Furnaces and Boilers made by the Utica Heater Company, and that orders placed with them for goods required west of the Indiana State line will be promptly filled. The Western agency will carry stock for filling all small orders, while orders for larger quantities of goods will be shipped direct from Utica, where sufficient time is given to make the shipment.

THE clerk of the Newport School District at Towner, N. D., will receive bids until August 1 for a Heating Plant for a four department school building.

THE contract for the plumbing for the Athelstan Club building, Mobile, Ala., has been awarded to Thomas Wagner of that city at his bid of $1475.

PRESIDENT FELMLEY and Trustee Charles Capen of the Normal University, Bloomington, Ill., opened the bids for plumbing and laying of 600 feet of water main at the State institution, and the lowest, from Frank Sullivan for $1155, was accepted. The job includes the establishment of ten drinking fountains inside the building, the renewal of the toilet rooms and a general overhauling of the plumbing.

C. BIRKERY, manufacturer and patentee of the Birkery High Pressure Ball Cocks, has opened a brass finishing and general foundry business at 65 Suffolk street, Hartford, Conn. It is Mr. Birkery's intention to make all of his well-known Ball Cocks and specialties at this location, instead of having them made by other concerns, as heretofore.

THE W. J. CLARK COMPANY, Salem, Ohio, are putting upon the market Seamless Melting Ladles made of extra strong plate steel. The bowl and the handle are in one solid piece, the handles being extra long and strong in proportion to the size of the bowl. The bowls are made round with D shaped ends, excepting the smaller sizes. As plate steel withstands heat better than either gray or malleable cast iron, these Ladles last longer and are safer to use than the others. The Ladle bowls are made extra thick, which makes them more durable than the ordinary Ladles. They also have an added advantage in having two pouring lips instead of one, and as the handles are welded solid to the bowls, no rivets being used, they are much more convenient and cleaner than the old style Ladles. The W. J. Clark Company are also manufacturers of the famous Salem and various other styles of Riveted Buckets, Quick as a Wink Hose Couplings, Lane's Joist and Timber Hangers and other patented specialties. Their Ladles are sold through the jobbing houses of Plumbers' Supplies.

THE READING IRON COMPANY, Reading, Pa., have issued an announcement through their New York sales

agent, Pancoast & Rogers, stating that their mills at Reading have resumed operations, and that the difficulties which they have had with their workingmen have been adjusted. They are now in a position to accept orders for Wrought Iron Pipe for steam, gas and water, Boiler Tubes of charcoal iron and steel, Oil Well Casing, Line Pipe, Drive Pipe and special Tubing for ammonia coiling and ice machine work, for locomotive pipes, water grate bars, steam engines, boilers and for a complete line of all other goods which they manufacture.

The State Line Mfg. Company of Chattanooga, Tenn., are sending to the trade an announcement that they have opened an Eastern office at 107 Chambers street and 91 Reade street, New York City, to meet more promptly the demands of a steadily increasing business in the Eastern States and their growing export trade. In addition to Gas Burners for ordinary city gas the company make an extensive variety of Burners for Acetylene Gas.

New Firms and Changes.

William Regan of Concord, N. H., has purchased a plumbing business in Laconia, N. H.

Joseph McKenna of Westerly, R. I., has opened a branch of his plumbing shop on the west side of that town.

Severson & Co. are a new firm in the plumbing, heating and jobbing business at Crawfordsville, Ind. The firm are composed of Claronce Severson, Fred. C. Rowland and Fred. Doherty. Mr. Severson was for 15 years in charge of the plumbing establishment of Wallace Brothers at Lafayette. The new firm have a fine showroom in which modern plumbing fixtures are attractively displayed. They also make an attractive display of Chandeliers and Gas Fixtures.

A. McCreery, who has been manager for H. E. Wieber at Tannersville, N. Y., for the past six years, has resigned his position and opened a plumbing, heating and metal work establishment at that place. Mr. McCreery will be pleased to receive catalogues and price-lists from manufacturers and dealers in goods in these lines.

The Sheet and Tin Plate Strike Situation.

The great strike in the union sheet, hoop and tin plate mills of the American Sheet Steel Company, American Steel Hoop Company and the American Tin Plate Company, inaugurated on July 13, shows no signs of settlement. On the contrary, both sides appear to be preparing for a long struggle. Agents of the Amalgamated Association have been busy in the past week working among the employees of the nonunion mills of the concerns named, with the object of getting them to go out on a strike, but so far their efforts have met with little success.

In the sheet mills the center of interest this week has been in connection with the works of the American Sheet Steel Company at Wellsville, Ohio. This plant has always been nonunion, and two or three days after the strike occurred the Amalgamated Association succeeded in closing it down in nearly all departments. The mill did not remain idle long, however, as a day or so after it was closed Persifor F. Smith, manager, made an address to the men, setting forth how the company had always treated them well, paying them the highest rate of wages and giving them employment when other mills were idle. Mr. Smith's address to the men had a good effect, for on Thursday morning a majority of the men returned to work, and at this writing the Wellsville works are running nearly full. The fact that Mr. Smith's efforts to start this plant were so successful had the effect of disheartening many of the men who had joined the Amalgamated Association, and they severed their connection with it and returned to work. Strenuous efforts have been made in the past week by the Amalgamated Association to get the men in the other nonunion sheet mills of the American Sheet Steel Company, at Vandergrift, Apollo, Leechburg and elsewhere, to go out on a strike, but without success. At this writing all the nonunion sheet mills are running to full capacity and with no signs of discontent among the men. The Wood works, at McKeesport, have been idle for two weeks or more undergoing extensive repairs. These have about been completed, and this works, which is the second largest owned by the American Sheet Steel Company, it is said, will be started immediately. The management anticipate no trouble in getting the men to return to work. With all their nonunion mills running, the American Sheet Steel Company will be able to turn out close to 60 per cent. of their entire capacity.

As far as the tin plate mills are concerned there has been no change in the situation. All the tin plate mills owned by the American Tin Plate Company, with the single exception of the Monessen works, at Monessen, are idle, and the company have made no effort to start them up. The American Tin Plate Company are now receiving the product of the ten mills of the Sharon Tin Plate Company, and this has helped out on contracts.

No effort has been made by the Amalgamated to call out men in other mills controlled by the United States Steel Corporation, nor is it believed there will be. The statement of J. P. Morgan last week, that the course pursued in the strike by the management of the various companies controlled by the United States Steel Corporation had his entire approval, and that there would be no compromise, is construed to mean that the United States Steel Corporation are in the fight to stay to a finish and that any overtures for settlement must come from the Amalgamated. All sorts of statements, and threats as well, are being made by President Shaffer and his followers, but these have had no effect. The officials of the Amalgamated are beginning to realize that when they went into a fight with the United States Steel Corporation they were meeting the strongest organization they have ever encountered, and the belief is spreading that the Amalgamated made a serious mistake when it went into this fight.

The opinion is freely expressed that the Amalgamated Association has made a monumental blunder in going into this strike with the United States Steel Corporation, and that it is doomed to be defeated, entailing a probable disruption of the organization. The officials of the United States Steel Corporation are not paying much attention to the strike at the present time, nor are attempts being made to get idle mills started. It is realized that on account of the hot weather the men desired to rest for a month or so, and some repairs are also necessary at the idle mills. Therefore conditions are not likely to show much change for some time. When cool weather comes the United States Steel Corporation are likely to take up the strike in a vigorous manner and adopt such measures as will soon end it. While nothing official has been given out, it is pretty certain that the Amalgamated Association would not get as favorable terms now as they were offered when the strike first occurred.

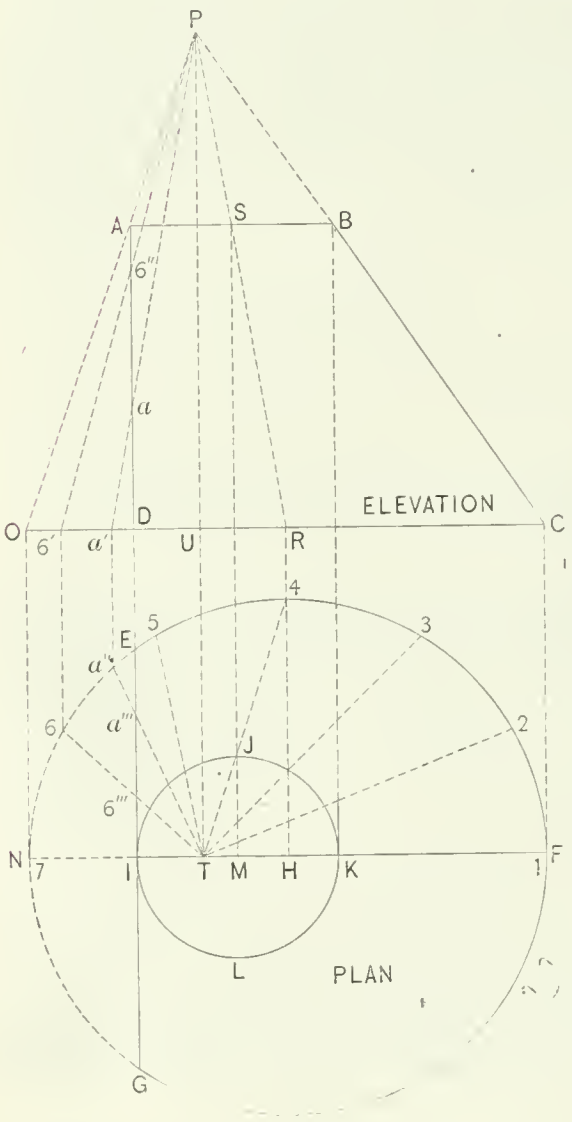
The Woodbine Machine & Tool Company, Woodbine N. J., who are manufacturers of Drive Well Points and Tubular Well Supplies have announced that they have made arrangements with the Gould Mfg. Company of Philadelphia, Pa., to manufacture and sell exclusively their Adjustable Combination Air Force and Testing Pump. These Pumps can, by a simple turn of the thumb nut, throw the cylinder at any angle, adjusting the Pumps for any corner. The Pump can be adjusted so the operator can apply his force to the best advantage. It is an adjustable as well as a combination air force and testing pump. It can be used for testing soil pipe, proving gas mains and it is the best plumbers' force Pump on the market. It is worked with air and water, and there are no stuffing boxes whatever. The company expect that there will be a large sale for these Pumps, and with the increased facilities and most modern machinery which they are going to use in the manufacture, the Pumps will be superior to those which have already given them a reputation. They are in a position to fill orders promptly and will be pleased to hear from the trade.

Envelope of Scalene Cone.

A Minneapolis correspondent wishes us to describe the pattern for the frustum of a cone which is flat on one side, the top opening to be perpendicular to the flat side, as shown in Fig. 1, in which A B C D shows the side elevation of the cone, E F G in plan being the section on D C in elevation and struck from the center H, while I J K L is the plan on A B in elevation and is struck from the center M. E G in plan shows the flat side, on the line D A in elevation.

With H in plan as center, complete the full circle of the base, as shown by G N E, and draw the center line in plan N F. Likewise in elevation extend the base line C D, as shown by C O, which intersect with a line drawn from N in plan at right angles to F N, thus obtaining the point O in elevation. From O draw a line to A, extending it indefinitely, as shown by O P. In similar manner extend the line C B until it intersects O P at P. At right angles to N F in plan and from the center H draw a line intersecting the base O C in elevation at R. In similar manner from M, the center of the circle of the top I J K L in plan, erect a line at right angles to N F, intersecting the top line A B in elevation at S. Draw a line through R and S, which must meet the apex P, as shown, thus making P O C a scalene cone. From P at right angles to O C drop a line intersecting the line N F in plan at T, which is the apex in plan of the scalene cone. Now divide the half plan N 4 F into equal spaces, as shown by the small figures 1 to 7; from these small figures draw lines to the apex T in plan, the radial line 6 T intersecting the flat side E G in plan at 6‴. From 6 erect the vertical line intersecting the base line C O in elevation at 6′, from which draw a line to the apex P, intersecting the side A D at 6″.

For convenience, when getting out the pattern for the flat side establish any point, as *a*, on the line A D in elevation. From *a* draw a line to the apex P, extending it downward until it intersects the base line O C at *a*′. From *a*′ at right angles to O C drop a line, intersecting the circle at *a*″, from which draw a line to the apex T in plan, intersecting the flat side E G at *a*‴. All of these points represent the basis of all measurements required for the patterns.



Envelope of Scalene Cone.—Fig. 1.—Plan and Elevation.

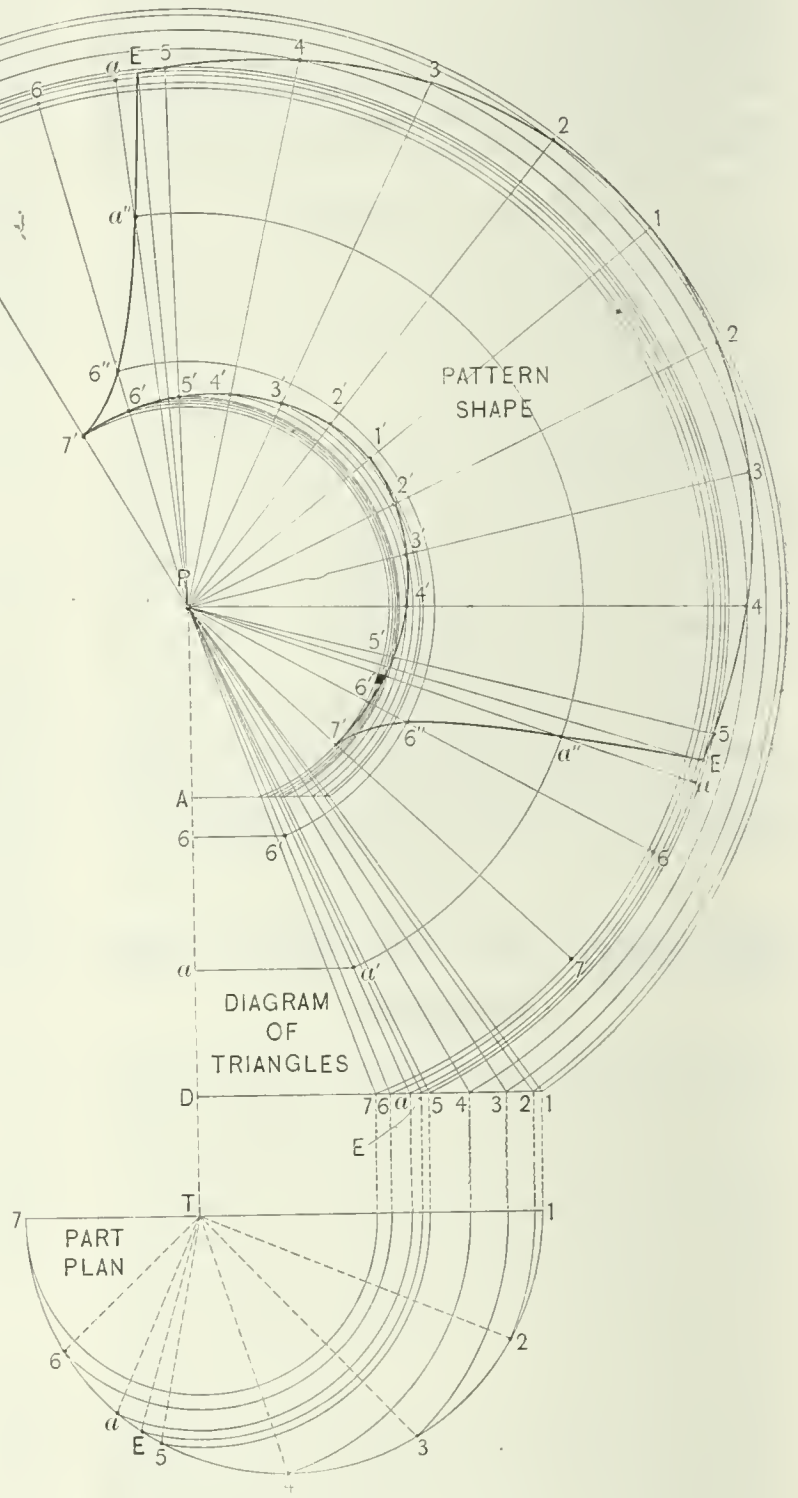


Fig. 2.—Part Plan, Diagram of Triangles and Pattern.

Before obtaining the pattern for the scalene cone first construct the diagram of triangles shown in Fig. 2, in which 1 T 7 4 is a reproduction of 1 T 7 4 reversed in Fig. 1. Take the various divisions 6 *a*″ E 5 4 3 2 1 and place them as shown by 6 *a* E 5 4 3 2 1 in Fig. 2. From these points draw lines to the apex T in plan. Now, using T as center and radii equal to T 7, T 6, T *a*, T E, T 5, T 4, T 3 and T 2, draw semicircles, as shown,

intersecting the center line 1 7, as shown. From these intersections and at right angles to 7 1 draw lines intersecting any horizontal line, D 1, at points D, 7, 6, *a*, E, 5, 4, 3, 2 and 1. Extend the line T D indefinitely to P, as shown. Take the distance from U to P in Fig. 1 and place it as shown from D to P in Fig. 2. Then from the various intersections on D 1 draw lines to the apex P, as shown. Now take the various hights in Fig. 1 from D to *a* to 6″ to A and place them in Fig. 2 on the line D P, as shown from D to *a* to 6 to A. At right angles to D P and from A draw the line A B, which represents the top of the opening.

In similar manner at right angles to D P and from the intersections 6 and *a* draw lines intersecting hypotenuses having similar numbers, as shown by the intersections 6′ and *a*′ respectively. Then will these lines represent the diagram of triangles used in the development of the patterns. For the pattern shape use P as center, and with radii equal to P 7, P 6, *a*, E, 5, 4, 3, 2 and 1, strike arcs indefinitely, as shown. Set the dividers equal to the divisions into which the plan is divided, and starting from the arc 7 step to the arc 6, then to the arc 5, then to 4, 3, 2 and 1, and reverse the operation and step to arcs 2, 3, 4, 5, 6 and 7, as shown. From these points draw lines to the apex P. Next set the dividers

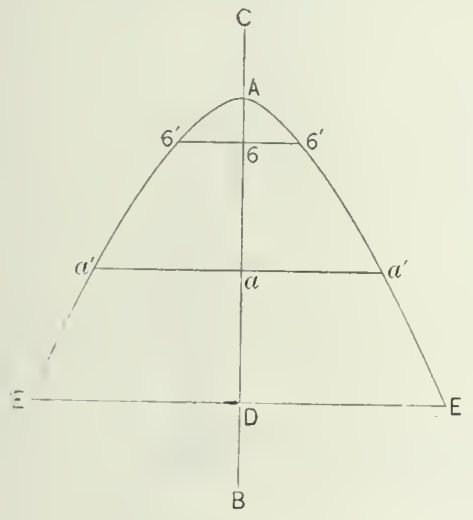


Fig. 3.—Pattern for Flat Side.

equal to the distance 6 *a* in plan, and step from the arc 6 in the pattern to the arc *a*, as shown by *a* on each side. In similar manner take the distance from *a* to E in plan, and step from arc *a* to arc E in pattern on either side. From the points *a* E and E *a* in the pattern draw lines to the apex P. Now with radii equal to P 6 and P *a*′ draw arcs intersecting the radial lines in the pattern drawn from points *a a* and 6 6, thus obtaining the intersections *a*″ *a*″ and 6″ 6″. Finally, with P as center and radii equal to the various numbers 1 to 7 on A B (not shown), draw arcs intersecting radial lines having similar numbers, as shown, thus obtaining the points 7′ to 1′ to 7′. Trace a line through points thus obtained; then will 7′ 6″ *a*″ E 1 E *a*″ 6″ 7′ 1′ 7′ be the pattern shape for the scalene cone.

For the pattern for the flat side draw any line, as B C in Fig. 3, upon which place the distances A 6 *a* D. equal to A 6″ *a* D in elevation in Fig. 1. At right angles to B C in Fig. 3 and through the points 6 *a* and D draw lines, as shown. Now, measuring in each instance from the line N F in plan in Fig. 1, take the distances to points 6‴, *a*‴ and E and place them in Fig. 3 on lines having similar letters and figures, measuring in every instance from the line B C on either side, thus obtaining the intersections 6′ 6′, *a*′ *a*′ and E E. A line traced through points thus obtained, as shown by E A E, will be the pattern for the vertical side of the cone.

Owing to the increased volume of business done by the Western branch of the Berger Mfg. Company at St. Louis, Mo., under the management of S. Y. Buckman, the company have been obliged to remove their St. Louis office and warerooms into more commodious quarters at Nos. 19 and 20 South Main street, where they are in better shape than ever before to conduct business. In a circular to the trade the company state that any orders received will be handled promptly and carefully.

THE TIN PLATE PRODUCTION OF PENNSYLVANIA.

James M. Clark, chief of the Bureau of Industrial Statistics of Pennsylvania, has furnished us with the following statistical data relative to the tin plate industry of that State:

In 1899 Pennsylvania had 21 black plate plants—that is, tin plate plants manufacturing their own black plate for tinning. Eighteen of these plants were under one ownership, five of which were subsequently dismantled and the remaining 13 operated for a part of 1900. Two of the remaining three were run in 1900, making 15 black plate tin works plants operated in Pennsylvania in 1900.

The average number of days of employment was only 201, the occasion of which was a strike which lasted for fully three months. Notwithstanding the dismantling of these five plants, by reason of the better equipment of the live ones the capacity remained practically the same, the output for 1899 being 1017 net tons daily and for 1900 1014 net tons.

The capital invested in these 15 plants was $9,315,000, as against $8,150,000 invested in the 21 plants in 1899. Production of black plate for tinning was 302,928,000 pounds. Of this production 255,844,000 pounds were tinned. The value of the tinned production was $10,561,760, and the total value of the black plate works was $12,197,787.

There were 7069 workmen employed, skilled and unskilled, boys, women and girls. The aggregate amount of wages paid to them was $3,428,259, and the average yearly earnings of all was $484.97. The average daily wage for all was $2.41.

Six tin plate dipping works were in operation during the year—that is, establishments where all black plate is purchased. These plants have 48 tinning sets, with a daily capacity of 194 net tons of tin and terne plate. The capital invested is $451,827. The working people employed were 363, skilled and unskilled, boys, women and girls. The aggregate amount of wages paid to them was $137,700, and the average yearly earnings for all $371.08, with an average daily wage for all of $1.47.

The total production of tin and terne plate by the black plate works and the dipping works combined was 289,392,000 pounds, and the aggregate value $12,669,747.

In the production of black plate for tinning produced at the black plate works there is a falling off from 1899 of 65,672,734 pounds, or 17.8 per cent., which falling off is accounted for because a strike prevailed during 1900 for fully three months. This strike likewise affected the production of the tinned product, which fell off 36,320,734 pounds, or 12.4 per cent.

The average value per net ton of black plate for tinning produced in 1900 was $69.49, an increase over the average value of 1899 of $19.70, or 39.6 per cent. The average value per 100 pounds of the tin and terne plate produced at these works was $14.13, an increase over 1899 of 62 cents, or 17.7 per cent. The average number of workmen employed was 613 loss than in 1899, or a decrease of 8 per cent. The average earnings of all workmen employed were but $484.97, a decrease from 1899 of $42.81, or 8.1 per cent. The average daily wage for all workmen employed was $2.41, an increase over 1899 of 5 cents per day, or 2.1 per cent.

The Marshalltown Iron & Steel Company of Marshalltown, Del., are producing Sheets from No. 16 to No. 28 by the loose rolled plan, which gives them an even black finish. The mills are kept constantly employed in serving a limited number of customers who are anxious to secure their produce. Their factory for making 32 sizes of Sheet Iron Dripping Pans and Stove Pipe and Elbows is also kept running full.

THE SMITH-WARREN HOLLOW METAL WINDOW FRAMES AND SASHES

The hollow metal window frames and sashes, glazed with wire glass, made by the Smith-Warren Company of 143 Federal street, Boston, possess many advantages over the ordinary fire shutters. They always afford free access for light and at the same time offer a positive resistance against the spread of fire. The windows close and lock automatically if left open, in case of fire.

The company have several different types of constructions suitable for different classes or parts of buildings, from the cheapest window having a stationary lower light and vertical sliding (or pivoted) top sash, suitable for areas, factories, stairways, elevator shafts, &c., to one having three weighted sashes, two of which are glazed with wire glass and the third, or inner sash, glazed with clear glass, and provided with a metal fly screen if desired, suitable for use on the principal street fronts of the best class of office, apartment and hotel buildings. The frames can be molded so as to secure

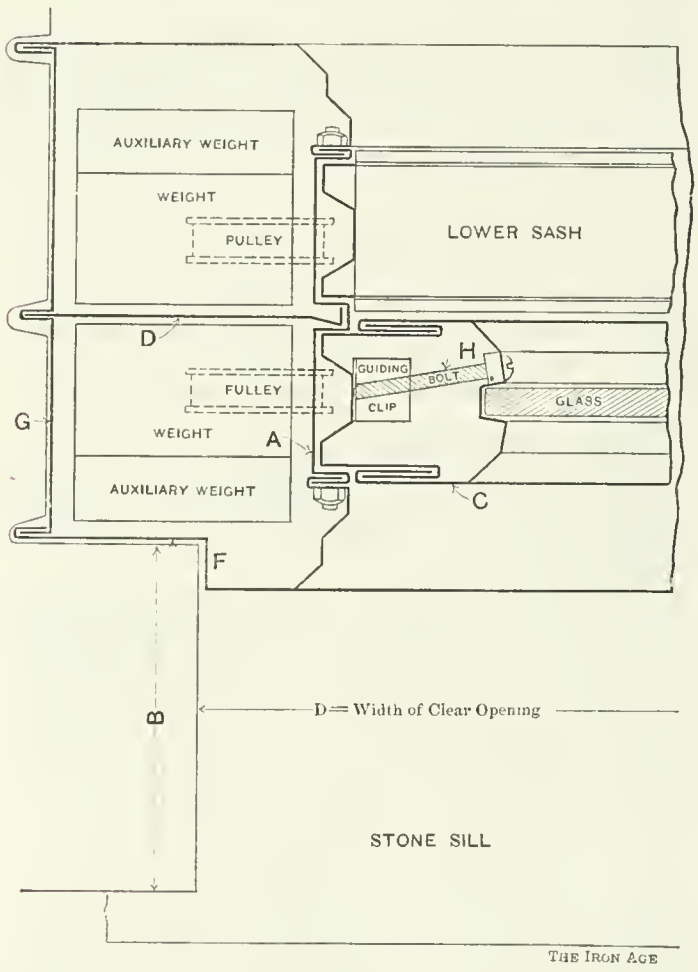


Fig. 1.—Sectional Plan, Showing Construction.

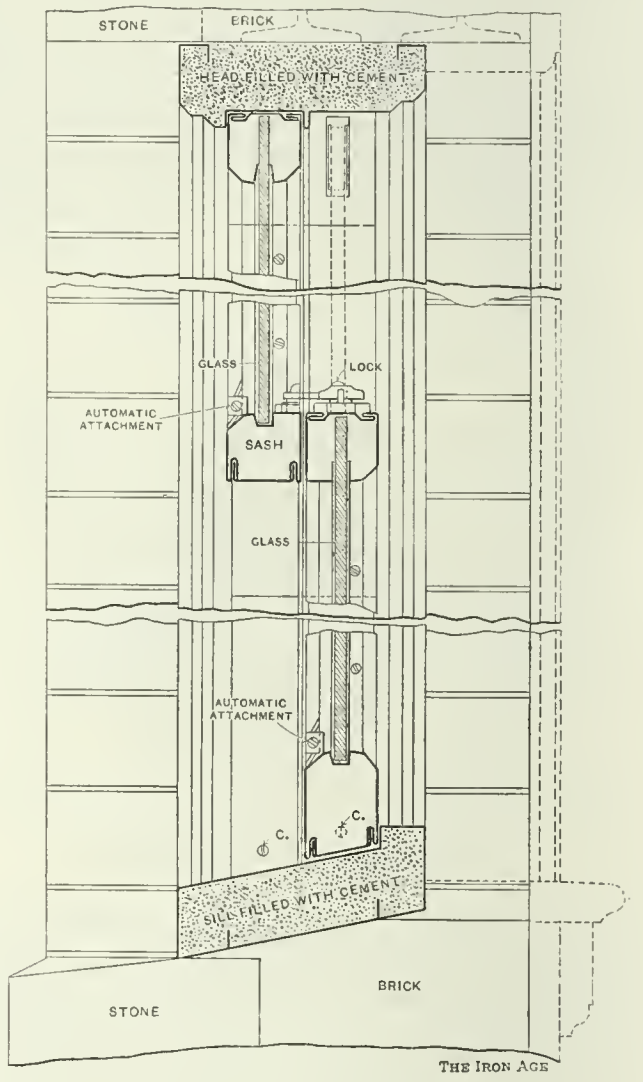


Fig. 2.—Vertical Section.

THE SMITH-WARREN HOLLOW METAL WINDOW FRAMES AND SASHES.

any architectural effect desired, are perfectly straight and true, and there are no joints visible. As the frames are hollow, one side may be heated to a white heat, while the other side remains cool, thus insuring continual structural strength. They can be made with hinged, pivoted or stationary sashes, with or without transoms, single or in groups of two or any number, and can be adapted for use in interior walls, elevator shafts, &c., as well as in exterior walls. The glass fits into grooves formed in the center of the sashes and requires no clips or putty to secure it. The sashes are made of No. 24 gauge galvanized iron or 18-ounce copper; the frames of No. 24 or No. 22 gauge galvanized iron or 18 or 20 ounce copper, according to type of construction, situation, &c.

The first two drawings show one type of construction. The side of the frame consists of parts A, F, G and D, and are joined by locks, as shown. The guiding face A is of heavier material than the other parts and can be easily renewed without disturbing the frame proper. It is made in two pieces with a joint nearly midway between the head and sill. The lower part is secured in place by screws, C, Fig. 2, thus allowing easy access to the weights by its removal. The part D extends the whole length of and entirely through, and serves to stiffen, the frame. The part C of the sash joins the horizontal top and bottom rails and forms a part of the sash frame for holding the glass.

The part B is joined to C by a long sliding lock, as shown, and is held out from the sash and into the guiding face of the frame by bolts H. The sash can be removed by loosening these bolts, which allows B to recede into the sash and out of the frame, thus making the sash narrow enough to allow it to pass out of (or into) the frame, between the stop beads. It will be seen that the sash being adjustable in width, insures a snug fit in the frame. It will be noticed that the wearing parts of both frame and sash are easily renewed without disturbing the body of either, and the peculiar formation of both frame and sash with their locks makes them very rigid.

Fig. 2 is a vertical section showing the head and sill filled with cement, and the method of constructing the top rails of both sashes in two parts, so that the glass can be easily placed into position.

The cap A is made of heavy material, is secured in place by locks, as shown, and can be quickly removed by sliding out at one side of the sash.

The automatic self closing attachment is shown in Fig. 3. In weighted sash constructions the weights of the lower sash are made lighter than the sash, and those for the upper sash heavier, thus causing both sashes to close, and in the window in which one sash balances the other, using no weights, the lower sash is made heavier than the upper, which causes the lower sash to descend and the upper sash to ascend, thus closing the windows. But in order to hold the sashes open when desired a friction is provided at the side of the sash against the frame, thus compensating for the difference in weight between the sash and its balancing weights, which hold the sash in any position desired.

This friction device will be understood from the following: A square tube, A, is secured permanently in the side rail of the sash. A movable hard wood friction shoe, B, slides in and projects from the end of the square tube A and comes in contact with the side of the frame. This friction shoe is pressed outward by the spring C, the pressure of which is regulated by the position of the nut D, the position of which is changed by turning the bolt E, which is held in the square tube by the detachable cap F. A part of the bolt head projects through the cap so that it can be turned with a screw driver, thus regulating the pressure of the spring. The detachable cap F is held in place by solder that melts at between 150 and 180 degrees F. It will be seen that if the windows are open, in case of fire the fusible solder will melt, releasing the detachable cap which will release the bolt and spring, thus removing the pressure of the friction shoe B from the side of the frame, and as there is then no obstruction the sashes close. The attachment is small and is partly concealed within the hollow space of the sash, thus not being noticeable in the appearance of the windows.

The automatic lock is illustrated in Fig. 4. A piece of malleable cast iron, A, is pivoted in the muntin of the upper sash and projects through the muntin at its lower end, the weight of the lock being distributed with reference to its pivot so as to keep this end projecting out of the muntin at all times without the aid of a spring. The cast iron plate B is riveted on the top of the lower sash and has upwardly projecting lugs, D, between which A passes. An iron wedge, C, is inserted between the lock A and lugs D on the plate B, and by pressing the wedge into place the meeting rails of the sash are brought closely together, the upper sash is forced up and the lower sash down, thus tightly closing the windows and making a burglar and weather proof fastening. To open the windows it is only necessary to remove the wedge C and press the lock A back into the muntin with the finger, when the sashes may pass each other.

When the window closes automatically (if left open in case of fire) the lock A will move out of the muntin and over the lower sash, thus holding the windows securely locked independent of the chains. Should the chains fuse or elongate on account of the heat, the windows will remain closed.

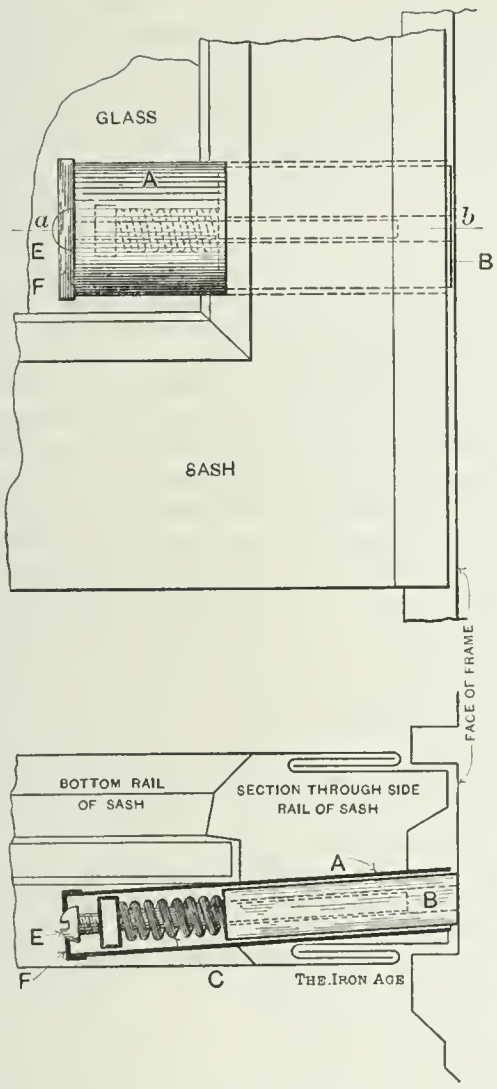


Fig. 3.—Automatic Self Closing Attachment.

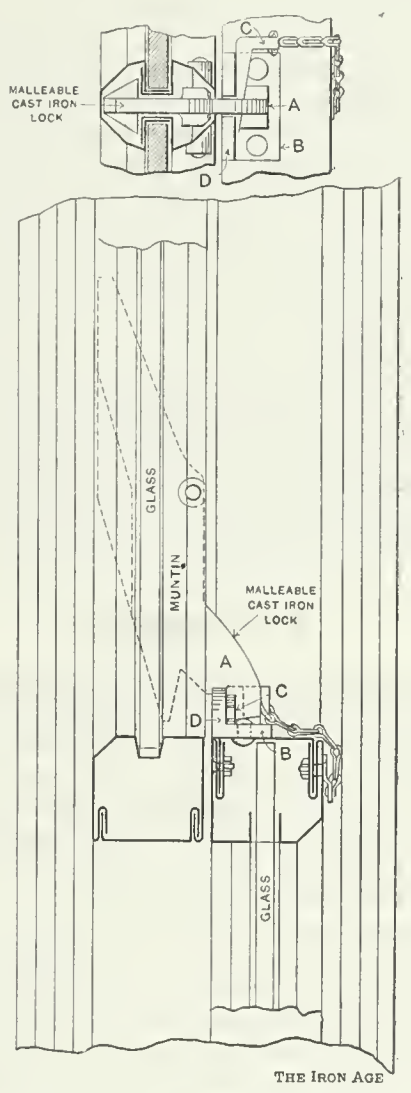


Fig. 4.—The Automatic Lock.

Architectural Sheet Metal Work.

The Edwards Mfg. Company, formerly the Art Metal Relief Company, York street and Pike, Covington, Ky.,

THE SMITH-WARREN HOLLOW METAL WINDOW FRAMES AND SASHES.

are sending out a catalogue of 84 pages illustrating an extensive assortment of sheet metal work which they are prepared to furnish on reasonable notice. In size it measures 9¼ x 11¾ inches, thus giving opportunity for the use of large engravings, or for a number of small ones upon each page. In presenting the catalogue to the trade the company refer particularly to their spun work and to their varied line of stamped ornaments. They also call the attention of architects, builders and owners of buildings to Weitzel's Polygon sheet metal conductor pipe, which is expansive and so constructed, it is claimed, that ice forming in it will not, by slipping, burst the joints and seams, but will descend gradually without injury to the pipe. The claim is also made that water during heavy rains will discharge more freely, as the pipe will not choke. Designs of finials, urns, cornices, belt courses, moldings, crestings and enrichments, rope and bead moldings, shells, panels and gable ornaments, wreaths, garlands, points, drops and scrolls, rosettes, ventilators, animal heads, flagstaff ornaments, fountains, leaves, modillions, brackets and capitals are

shown in profusion. The catalogue concludes with an index arranged by numbers rather than alphabetically.

A New Method of Rolling Sheet Metal.

Albert J. Demmler of Wellsville, Ohio, has recently been granted a patent on a new method of rolling sheet metal which he has invented. Through this new method Mr. Demmler claims to succeed in overcoming certain disadvantages in the methods heretofore employed, and it is also designed to simplify and cheapen the heating and rolling of packs of sheets. He carries out his object by heating the packs of sheets in bulk to a proper and even temperature throughout, carries the heated packs in bulk and feeds the sheets directly from the heated pack to the rolls.

The packs of sheets are heated preferably in a muffle furnace or an annealing box. When using an annealing box, the latter is formed by means of a plurality of slabs, each of which is designed for the support of a pile of sheet packs, whereby each pile may be carried in bulk upon the adjacent slab from the oven to the rolls, a suitable case or cover being applied to the pile during the transportation from the oven to the rolls and capable of being readily removed to permit of the sheets being individually fed to the rolls, it of course being understood that the slab remains in the meantime upon a suitable hot bed.

By this method, the furnace may be operated by unskilled labor, as there is no danger of the entrance of soot or sulphur and other injurious elements between the sheets, and although the time of heating may be longer, yet by a proper arrangement of the rolls with respect to the heating oven a practically continuous operation may be had and the output materially increased.

FLASHINGS.

Albert Niceer has opened a Tinsmithing shop and House Furnishing store at Pennsville, N. J., where he will do all kinds of Tin Work, Roofing and Spouting.

A company are being organized with a capital of $1,500,000 to work the Tin deposits in the Greenbushes district of Western Australia. The prospectus of the company makes very flattering promises regarding the prospects of success in this venture.

The Jackson Iron & Tin Plate Company have been incorporated with a capital stock of $300,000 at Clarksburg, W. Va., by C. C. Moore of Elkhart, Pa.; Col. T. Moore Jackson, Dr. Fleming Howell, C. S. James, Lynn S. Horner and others. The erection of an eight-mill plant will be begun at once. The citizens of Clarksburg have donated ground for the works.

A report from Sharon, Pa., states that large stamping works will be erected at New Castle, Pa., at a cost of $1,000,000. The corporation operating the works will be known as the New Castle Stamping Company. All kinds of Enameled Iron Ware will be manufactured. Application for a charter has been made by G. L. Patterson, T. F. Morehead, Charles J. Kirk, Leander Raney and A. W. Oberman.

It is reported that a company are being organized in Baltimore to operate on a large scale the Slate fields of the Peach Bottom district. It is stated that the new company will have a capital stock of $200,000, and that they will acquire about 100 acres of the best Slate land in the Peach Bottom region, installing the latest improved machinery.

The Alcania Company of Pittsburgh have applied for a charter of incorporation and propose to manufacture Sheets, Wire, &c. This concern have a small Tin Plate plant running at the present time in the Pittsburgh district.

In the construction of the new buildings now approaching completion at the Brooklyn Navy Yard glass has been employed to a greater extent than usual. The side walls have a brick base with glazing above, and put on in bevels or sections which are capable of being swung out to provide ventilation. The side walls of the clearstory are of Corrugated Iron with glazing above. The bulk of area of the shed roofs is Skylight, and wide Skylights are also placed in the clearstory roof.

The George A. Hogg Iron & Steel Foundry Company, Pittsburgh, manufacturers of Rolling Mill Machinery of all kinds, are equipping the Humbert works of the American Tin Plate Company, at Connellsville, Pa., with the Freeman patent annealing furnace chargor.

The friends of the Standard Paint Company, manufacturers of the P & B Goods, New York and Chicago, are receiving through the mails a very cordial invitation to not only visit the P & B pavilion at the Pan-American Exposition, but to make it their headquarters for keeping appointments, receiving mail, &c. The convenient location of the P & B pavilion near one of the gates of the exposition and the unique character not alone of the exhibit itself but of the handsome building in which it is placed are attracting many visitors. The pavilion is constructed entirely inside and outside, walls, ceilings and floors, of the Ruberoid Roofing made by the company. Ruberoid enjoys the distinction of occupying one of the seven or eight of the individual exhibition buildings at the Pan-American. The pavilion is the one which attracted so much attention at the Paris Exposition.

Peace has been secured in the Welsh Tin Plate trade for a further period of 12 months. At a joint meeting of the workmen and the employers held at Swansea recently, it was agreed that the present wage scale shall continue until June 30, 1902, on the condition that the representatives of the men guarantee that the wage rates be made uniform, it being stated at the meeting that some of the manufacturers were obtaining unfair advantages in that way. The required pledge was given by the men's representatives. Arrangements were made for the consideration of any grievance that might arise during the next 12 months by a joint wages committee.

The Illinois Roofing & Supply Company, 23 Lake street, Chicago, are issuing illustrated circulars calling attention to their specialties. One refers to Roofing, Spouting and other goods used by roofing and cornice makers, Metal Ceilings, Galvanized and Black Sheets, &c., while another treats exclusively of Tin and Terne Plates, enumerating the brands handled.

The David H. Wells Company have been incorporated at Wilmington, Del., with a capital of $15,000, to deal in Tin Plate and Sheet Iron, do a Roofing and Cornice business, and to handle Furnaces and Ranges.

The Bangor Crescent Slate Company of Bangor, Pa., are manufacturers of Roofing, Structural and Marbleized Slate, Plumbers' Slate, Electric Slate, besides furnishing the roofer with all kinds and grades of Pennsylvania Black, Genuine Bangor, Albion Bangor, Big Bed Lehigh, Chapman Hard Face and Peach Bottom. They are also prepared to furnish the plumber with Urinal Stalls, Shower Stalls, Closet Stalls, Laundry Stalls, Sinks, Slop Hoppers, Lavatories, Floor Slabs for water closets and bathtubs, Sink Wastes, &c. The company claim it shall be their aim to furnish the best materials for all of the above mentioned purposes, and that at reasonable prices to the trade. They request that they shall be written to before asking for prices, so that the trade may be convinced of their ability to furnish all kinds of goods in these lines.

United States Consul Hughes, at Coburg, Germany, in a letter to the State Department says that the Imperial German navy and some German manufacturers are using large quantities of "masut," an oily product of German brown coal tar, for heating and steam producing purposes. The advantages over coal are stated as follows: "The heat producing qualities are said to be one-fourth greater than those of coal; the oil is easier to handle, it being only necessary to open a valve. Very little smoke comes from its use, and steam can be produced and full power reached in less time. The coast defense vessels of the German navy are fitted for the use of this oil and some of the battle ships and cruisers are also arranged so that they can use both coal and 'masut.'"

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

COATING A GALVANIZED TANK.

From "Experience," New York City.—I notice the letter of "A. L. B.," in *The Metal Worker* of July 13 in reference to coating a galvanized tank, and also the recommendation of "J. R. Q.," on July 20, to use a good quality of asphaltum varnish. I subscribe to the idea presented, that a galvanized tank is not a desirable one for the storage of drinking water. From long experience I know that it is difficult to get paint to stick to galvanized iron. If the surface can be left exposed to the weather until it becomes dark in appearance and the action of the atmosphere roughens it somewhat so that paint will adhere, it is more than likely that it will hold for some time if the right kind of paint is used. If, on the other hand, the tank must be painted as soon as completed, it should be washed with a strong soda water, or with soft water to which some ammonia has been added, and then cleaned with clear water. A still better wash is dilute muriatic acid, which will on drying produce a grayish film that should be washed off with clear water and the surface allowed to dry before beginning to prime.

As to a paint for the first coat on galvanized iron, beware of white lead, because it remains soft and eventually peels off, and of zinc white, which will crack and flake, or any light carbon paint which requires much oil to spread, because this will wrinkle and later on part. The cheap, ordinary mineral paints will not serve the purpose either, because they are liable to peel. Red lead as the basis for an all oil paint has given best service, but it, too, has given away at times. The cause of the trouble appears to be that in an all oil paint the oil is attacked by the metallic zinc. After many trials I have found that a paint made from a heavy pigment that requires a small percentage of thinner for spreading will best serve the purpose of first coating galvanized iron. The most desirable results have been obtained from a good mixture of equal parts by measure (not weight) of dry lead and first-class mineral brown ground together dry and then mixed by hand with equal parts of pure raw linseed oil and spirits of turpentine, without the use of any japan or liquid dryer. Over this priming coat any good oil paint may be applied and permanent adherence expected.

A solution for washing galvanized iron used by an old acquaintance who vouches for its excellence is as follows: Dissolve 2 ounces of chloride of copper, 2 ounces of nitrate of copper and 2 ounces of sal ammoniac in 1 gallon of water; then add 2 fluid ounces of crude hydrochloric acid. This solution must be made up in stone or earthen ware to prevent precipitation of the copper salts. Cover the surface of the galvanized iron with the solution and it will assume a black color, which on drying over night will turn light gray. Upon it a red lead prime, thinned with equal parts of raw linseed oil and turpentine, will hold indefinitely. Subsequent coats can be given in colors, rich in oil. Galvanized iron should at no time be first coated with an all oil paint.

REESE'S SOLDERED STANDING JOINT.

From M. C., New York.—I would like to ask if Reese's soldered standing joint, as illustrated in *The Metal Worker* of July 13, is any different from the regular standing groove roof that has been used for so many years, also if the Reese patent interferes with putting on the old standing groove roofs, either on sheathing or over shingles?

Answer.—We have referred this question to Henry O. Reese of the firm of E. L. Parker & Co., Baltimore, Md., the patentee, who replies as follows: "Reese's soldered standing joint differs from the regular standing joint only in the second turn, which is reversed from the old way and then soldered. My patent does not interfere with the old way of putting on any kind of roof."

TROUBLED BY WALL SWEATING.

From B. W., Innerkip, Ont.—I have a customer who has a rough cast hollow wall house. It is finished with lath and plaster on the inside and has the same finish on the outside. The walls sweat so much in the winter time that the bed clothes become wet and water can be scooped up on the floor. The house is of frame construction and is girt half way up the side of the building. The front is one and a half story, while the kitchen is but one story in hight. There is just as much trouble in the kitchen as in the front room from the sweating. The walls are hollow from top to bottom. On one side there is a row of five maple trees 20 feet from the house. On the other side there is a driveway between the house and another row of five trees from 35 to 40 feet from the house. Can it be that the trees cause the trouble? I should be glad to have any assistance possible toward remedying it.

Note.—The sweating is caused by the walls being cooler than the atmosphere of the room, which induces the moisture contained in the air to condense. Where moisture is precipitated in such a quantity as mentioned it is owing to excessive moisture in the air. In the winter season the walls naturally are cooler than in the summer, which would induce a quicker condensation. Inasmuch as the doors and windows are closed in the winter season, the amount of moisture in the air can be controlled by the occupants of the building. If a tea kettle is kept on the cooking stove and the stove is used for boiling and preparing food or for any domestic work of that nature, considerable steam will be made, which will be taken up by the air in the room and deposited wherever the air comes in contact with a cool surface. Not having detailed information as to the cause in the case in question, we give this explanation of what would ordinarily cause condensation, and probably our correspondent can devise a remedy from the information presented.

WILL PIPE COVERING STOP SWEATING?

From J. A. M., Baltimore, Md.—I notice the inquiry of "G. E. S.," in *The Metal Worker* of July 20. The first point is to find what causes the sweating. This is not difficult in view of the excessively humid weather that has prevailed in this section of the country for some time. The water pipes in the basement of a building are naturally cool—much cooler than the atmosphere, particularly if water is flowing from the street mains and passing through the pipe. When air which has a large percentage of moisture in it comes in contact with these cold pipes the moisture rapidly condenses and the water will run down and cause annoyance. In order to avoid this annoyance some insulating material must be provided to prevent the air from coming in contact with the cool pipe, and any of the good pipe coverings are well adapted for the purpose, particularly those of a fibrous construction. If hair felt is used on the pipe and this is covered with canvas, the trouble will be overcome, so far as the summer season is concerned, and a very effective protection against the effect of frost in winter weather will be provided.

ACCOUNT OF PLUMBERS' TIME.

From C. H., Plymouth, Mich.—I should be glad if some of the readers of *The Metal Worker* would give me the benefit of their experience as to the best plan for keeping an account of plumbers' time. A simple and not too complicated system is one that I am in search of, suitable for a small jobbing shop.

Note.—This is a subject that will interest many of our readers, and we shall be glad to receive information from those who are using some plan for keeping account of a workman's time which they have found practical in operation.

RAIN WATER CUT OFF.

The Martin Roof Washer Company, Springfield, Mo., send us a circular of their roof washer and state that if "W. F. C.," who inquired for a rain water cut off in *The Metal Worker* of June 8, will address them, they will send him their circular, when he can see if their device will answer his purpose.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is quiet and ½c. lower.

Copper is unchanged and dull.

Pig Lead is in moderate demand and unchanged in price.

Spelter is very dull and rather weak.

Antimony is inactive and unchanged.

Nickel is still strong and scarce.

Aluminum continues in good demand at former prices.

Tin Plates are growing very scarce; jobbers have advanced prices sharply.

Sheets are also scarce and demand pressing; prices are advancing for both Black and Galvanized.

Old Metals are dull and weaker.

Pig Iron is irregular but with good statistical position; prices are no lower.

Hardware is less active, but prices continue firm.

Plumbers' Supplies are moving in fair volume with prices on the up grade.

Wrought Iron Pipe is still scarce and strong in price, with prospect of further advance.

Enameled Sanitary Ware is also in short supply, with prices unchanged.

Tin Cans have been marked up 10 per cent.

Wire Nails are in good demand at unchanged prices.

Cut Nails in small lots are firm.

Wire continues in large demand and firm in price.

White Lead is in fair demand; prices firm, but no higher.

Linseed Oil is still high in price and in moderate demand.

Spirits Turpentine rules about ½c. a gallon lower.

METAL MARKET.

New York, July 26, 1901.

Pig Tin.—During the week a sharp decline in the price of Pig Tin occurred both in the London market and here. Notwithstanding an effort in London to boost up the market, prices here refused to respond, and closed from ½c. to ¾c. lower than those ruling a week ago. Jobbers quote Straits Pig in small lots at 27¾c. to 28¼c. per lb. The strike, which has resulted in closing up nearly all the Tin Plate mills of the country, has had a depressing effect upon the market as temporarily cutting off the largest consumers.

Copper.—Quotations on Copper are nominally unchanged, but there are some persistent rumors that prices have been cut in some quarters from ¼c. to ½c. a lb. There is hardly any demand from home consumers, and the export demand is of the smallest. It is stated that Europe is shipping here and that the business of importation is quite remunerative. This is a new feature of the market. Exports to Europe are steadily decreasing in volume this month. For the first three months they amounted to barely 4800 tons, as compared with 10,861 tons in the same period a year ago. Lake Ingot in small lots is quoted at 17¼c. to 17½c. per lb. and Casting Copper 16¾c. to 17c.

Sheet Copper.—There is no change in respect of this material. A very fair demand continues and prices remain firm on the basis of 21c. per lb. for moderate sized lots of Sheet Copper from store.

Pig Lead.—No change whatever has taken place in the Lead situation. Business is on a hand to mouth order and prices are the same as have been maintained for several months past, small lots of American Pig being quoted at 4.60c. to 4.62½c. per lb.

Spelter.—This market is still very dull as far as demand is concerned. There is a little side play of interest going on, however, between two large interests, one in New York and the other in St. Louis. The latter concern are trying to ward off the doubt in the article and are disposed toward seeing good round figures named, while the local concern, it is said, are trying to make good past transactions by bearing the metal. Good Western brands in small lots are quoted at 4.45c. to 4.50c. per lb. in New York.

Sheet Zinc.—A fair demand for Sheet Zinc is reported and jobbers quote 600-lb. cask lots at 6¾c. per lb., and smaller quantities at 7¼c.

Antimony.—Business is not active and prices are unchanged. Cookson's in small parcels is quoted at 10½c. to 11c. per lb., and Hallett's at 8¾c. to 9½c.

Nickel—Is firm and without change. Small lots are quoted nominally at 60c. to 65c. per lb.

Aluminum.—The demand for Aluminum continues active at former prices—viz., 37c. per lb. for small lots of No. 1 Ingot guaranteed 99 per cent. pure, and 35c. for 100-lb. lots.

Tin Plates.—The Amalgamated Association strike, which has resulted in the closing down of practically all the Tin Plate mills of the country catering to the trade at large, has caused a complete demoralization of the market. The scarcity referred to in our last report is daily becoming more pronounced. In some lines, notably in Coke Tins of the more popular sizes, there is already an absolute famine. Some of the jobbers and larger consumers, being unable to secure deliveries from the American Tin Plate Company, have been forced to place considerable orders abroad, and this action has caused prices of Welsh Tin Plates to advance from 1 shilling to 1 shilling 6 pence per box for 100-lb. Cokes. The few jobbers who are fortunate enough to have any considerable stocks on hand are getting fancy prices for their Plates. Instances have occurred during the past week in which small lots of Plates were sold to consumers absolutely obliged to obtain supplies, at from $1.25 to $1.50 per box above the prices ruling a week or ten days ago. With the jobbers it is no longer a case of looking for business, but rather of warding off customers who are clamoring to have orders filled and who are willing to pay fancy prices to obtain the material they urgently need. One hundred-lb. Cokes are the scarcest article in the market at present and are sold in small lots at an advance of nearly $1.50 per box. Prices under the circumstances are hardly quotable, as they depend entirely on conditions of sale, quantities in stock, urgency for shipment, &c. But it would be safe to say that, taking the whole list of Tin and Terne Plates, there has been an advance during the past week, made by Eastern jobbers, of fully $1 per box, with every prospect of prices mounting still higher. American Bessemer Coke Plates, I C, 14 x 20, are to-day being quoted in small lots (which is the only way in which they can be bought) at about $6.10 to $6.25 per box, and I X at $7 to $7.25. A similar, but not so radical, advance has also been made in Bright Charcoal and Terne Plates.

Anticipating the strike the American Tin Plate Company a few weeks ago sent out circulars to the trade announcing that they were practically sold up to October 1. As a result everything in sight was snapped up by the dealers and the larger consumers, and now the only orders booked are for October, November and December delivery, which the American Tin Plate Company are taking at former prices, but without any guarantee as to time of shipment.

Sheets.—The shut down of so many of the Sheet mills has caused a sharp advance in the prices of Black and Galvanized Sheets. Jobbers who can ship out from stock are able to obtain almost what they choose to ask for spot deliveries. The independent Sheet mills have advanced their prices for deliveries within the next three months about $4 to $5 a ton over the quotations made by the leading Sheet interest before the strike was declared. While the American Sheet Steel Company claim that they are operating 60 per cent. of their capacity and all the Sheet mills outside the combine are running full, it is practically impossible to get prompt delivery of Sheets at any price, as all the mills, even before the strike, were away behind with their deliveries on orders. Meanwhile, the demand for Sheets continues as heavy as ever, and the shortage of the supply is likely to be still more seriously felt as time goes on, unless the trouble is settled within a very short time. There is no evidence, so far, of any orders for Black Sheets having been placed abroad, but there is every likelihood that business will go over to the other side of the water within a short time if the strike is likely to be prolonged. New York jobbers during the week advanced their retail prices on Black Sheets about 20 cents per 100 pounds. No. 27 One Pass Cold Rolled Soft Steel Sheets are now quoted at about 4.10c. to 4.15c. Galvanized Sheets are very strong and continue in good demand, with growing scarcity. Prices on these goods, however, have not risen, so far, in proportion to those on Black Sheets. Jobbers are still quoting Galvanized Sheets at 62½ and 5 per cent. to 65 per cent. off the list.

Chicago advices are as follows: As it is very difficult to secure anything but promises from manufacturers, the jobbers are having a huge business from store. Stocks are already badly broken and it is impossible to secure some sizes. Prices are advancing, as might be expected, and the minimum quotation on No. 27 Black is 3.60c., with some houses holding firm at 3.75c. and even 3.80c. Galvanized Sheets may be had to a limited extent at 70 off, but most jobbers are quoting 65 and 5 off, while in some cases 65 is strictly adhered to. Tin Plates are held at a premium. Shipments from mills cannot be had and Coke Plates are getting particularly scarce.

Old Metals.—Labor troubles have interfered to some extent with the demand for Scrap Iron, and the demand is light, with prices rather soft. Old Metals are dull and weaker. Dealers are paying about the following prices for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 14¾c.
Light and Tinned Copper	per lb. 13¼c.
Heavy Brass	per lb. 10 c.
Light Brass	per lb. 8 c.
Lead	per lb. 4 c.
Tea Lead	per lb. 3½c.
Zinc	per lb. 2¾c.
No. 1 Pewter	per lb. 18½c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	$6.00
Wrought Iron Scrap, per gross ton	$10.50 to 11.00
Heavy Cast Scrap, per gross ton	10.00 to 10.25
Stove Plate Scrap, per gross ton	7.00 to 7.50
Burnt Iron, per gross ton	5.00 to 5.50

THE PIG IRON MARKET.

NEW YORK.—The market has been very dull and there are renewed reports of lower prices made by some Southern interests. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $14.50 to $15; No. 2 Foundry, $14 to $14.50; No. 1 Soft, $14.50 to $15; No. 2 Soft, $14 to $14.50; No. 3 Foundry, $13.25 to $13.50; No. 4 Foundry, $12.75 to $13.25.

PHILADELPHIA.—There has been a very good demand, considering the unsettled condition of things in the West, and prices have been easily maintained at the full figures of last week. Sales include all the various grades of Foundry Irons. Deliveries are well taken, and some of the furnaces are hard pushed to make shipments as quickly as desired. Locally, therefore, the situation is entirely satisfactory, and if it were not for the strike uncertainties the chances would seem to favor better prices, but in the meantime sales are made at about the following figures for deliveries, Philadelphia and equivalent points: No. 1 X Foundry, $15.75 to $16; No. 2 X Foundry, $15 to $15.25; No. 2 Plain, $14.25 to $14.75.

CHICAGO.—A number of commission houses report practically no market. Others have had a little more business than the previous week, but they could have had a great deal more and still have found trade far from active. The buying from the country foundrymen is somewhat better. Prices are well maintained under the circumstances. The local furnacemen are still so well supplied with orders that they are maintaining old prices. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon	14.90 to 15.15
Southern Coke, No. 1	14.65 to 14.90
Southern Coke, No. 2	14.15 to 14.40
Southern Coke, No. 3	13.65 to 13.90
Southern Coke, No. 1 Soft	14.65 to 14.90
Southern Coke, No. 2 Soft	14.15 to 14.40

PITTSBURGH.—The Pig Iron market is absolutely lifeless. None of the consumers of Iron are buying and there have been no sales on which to base prices. There is no pressure on the part of the furnaces to sell Iron. We quote Bessemer Pig, nominally, at $16; No. 1 Foundry, $14.50 to $15; No. 2, $14 to $14.50; No. 3, $13.75 to $14, f.o.b. Pittsburgh.

CINCINNATI.—The situation in Pig Iron is a rather puzzling one. The good selling as told of in last week's report indicated a good strong market, but the trade of the week just past did not carry out the promise. There was no selling in round lots and only the customary run of retail business. In response to some inquiries some pretty low prices have been brought forward. Nominally the quotations are unchanged, though in point of fact the minimum figures have been shaved as much as 25c. The inquiry has dropped away and everything is again dull. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$13.50 to $13.75
Southern Coke, No. 2	13.00 to 13.25
Southern Coke, No. 3	12.25 to 12.75
Southern Coke, No. 4	11.75 to 12.00
Southern Coke, No. 1 Soft	13.50 to 13.75
Southern Coke, No. 2 Soft	13.00 to 13.25
Southern Coke, Gray Forge	11.75 to 12.00
Southern Coke, Mottled	11.75 to 12.00
Ohio Silvery, No. 1	15.50 to 16.00
Ohio Silvery, No. 2	14.50 to 15.00
Lake Superior Coke, No. 1	14.50 to 15.00
Lake Superior Coke, No. 2	14.00 to 14.50
Lake Superior Coke, No. 3	13.50 to 14.00
Southern Basic	13.75 to 14.00

CHICAGO REPORT.

Scrap Iron and Steel.—Business is quiet. Borings and Turnings are a little higher in price because of the machinists' strike, which cuts down the supply. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap	$10.50 to $11.00
Machinery Cast	10.00 to ....
Malleable Cast	10.00 to 11.00
Stove Plate (free from burnt)	7.00 to 7.50
Burnt Iron and Grate Bars	5.50 to 6.00
Sheet Iron and Hoops	6.00 to 7.00
Plow Steel	9.00 to 10.00
Breaking Stock	9.00 to 9.50
No. 2, such as Shovels, Hoes, &c	.... to 7.00
Old Boilers—whole (Iron)	.... to 7.00
Old Boilers (Iron) cut in single Sheets and Rings	9.50 to 10.00
Old Gas Pipe and Boiler Tubes	9.50 to 10.00
Cast Borings	3.75 to 4.00
Turnings	8.50 to 9.00
Horseshoes	11.00 to ....

Old Metals.—The demand is still light, being even less than last week, and prices are lower. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	14½c.
Copper Bottoms	13¼c.
Copper Clips	14 c.
Red Brass	13¼c.
Yellow Brass	10 c.
Red Brass Borings	11½c.
Yellow Brass Borings	9 c.
Light Brass	7¾c.
Pipe Lead	4 c.
Tea Lead	3½c.

Zinc	2¾c.
Pewter, No. 1	19 c.
Pewter, No. 2	10 c.

Old Rubber.—The market is extremely dnll. Buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$23.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7¾c.
Rubber Car Springs	....	4¾c.
Inside Bicycle Tubing	....	21 c.
Outside Tubing	....	7¼c.

Rags.—Buying price of good conntry Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—A heavy bnsiness is in progress and Egg is very scarce. Another advance will be made Augnst 1. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis	5.75	6.00
St. Louis	6.25	6.50
Kansas City, Mo	8.25	8.50

A discount of 20c. from these fignres is allowed on all Coal ordered to be shipped in Jnly.

THE HARDWARE TRADE.

The trade throughout the country are feeling the effects of midsummer with its naturally dimlnished trade, owing in part at least to the presence of the vacation season and the prevalence of hot weather. Notwithstandlng these influences business continues in very good volume. Manufacturers report a large number of orders from both the jobbing and retail trade, bnt in most cases these orders are for moderate rather than heavy qnantitles. There is among the trade in general no serious distrust as to the steadiness of prices, and buyers are therefore covering their wants with reasonable liberality. In a few lines, especially those connected with the Wire industry, there is a disposition to purchase quite conservatively, as an impression is abroad that a reduction in price would not be surprising in view of the amount of competition which has developed and is either in the market or preparing to enter the market soon. In regard to Hardware, Heavy and Shelf, there is, however, a general feeling that the condition of the Iron market and the existing prosperity, which promises to keep business active and its volume large, will secure a substantial maintenance of prices on about the present level. This is on the assumption that there is no important disturbance, commercial or financial. The conrse of the strike of the Steel workers is closely watched and it is recognized that its long continuance would have an nnpleasant effect on the market, interfering with business and perhaps causing a scarcity of materlal, which would be embarrassing in certain lines. The crop situation is the object of much solicitnde, but, while it is to be feared that certain sections may suffer on account of the drought, it is substantially assured that the crops on the whole are snch as will secure the agricultnral classes a more than average retnrn and fnrnish a basis for continued general prosperity.

NOTES ON PRICES.

Wrought Iron Pipe.—There seems to be no improvement whatever in the condition of the Wrought Iron Pipe market. Scarceness of all of the sizes heretofore reported still continnes. The National Tube Company are said to be turning down orders from the smaller jobbers, and only the large ones who are known to bny exclusively from the combination are getting the preferred shipments. The threatened trouble at the mills has been averted by the company increasing wages 10 per cent. before a formal demand was made upon them by their workingmen. It is expected that an advance in prices will soon be announced and that the excuse given for this advance will be the recent increase in the salary list. The fact that the large jobbers covered themselves very extensively at prices ruling some time ago has acted more or less to retard an advance in prices by the mills, as until the mills have practically cleared np their orders, the jobbers wonld not take advantage of the advance if it were made. The jobbers in this vicinity have agreed upon prices to be charged for all Wrought Iron Pipe in quantities less than carload lots, and from what we can learn these prices are being rigidly adhered to. In fact in some cases the jobbers are demanding higher prices than those agreed upon by the association.

Solid Porcelain Earthenware.—The demand for Solid Porcelain Earthenware continnes unabated. It is nnderstood that two of the Trenton potters are to erect kilns which will increase their output at least 50 per cent. This additional kiln capacity will be used exclnsively in the manufactnre of goods used by the plumbing trade. The potteries are all sold out for the next three months, but prices have remained the same. We understand that efforts are being made to bring abont an eqnalization of prices among the different manufacturing potters. One of the elements which have militated against snch a scheme being put through heretofore was the fact that so many pieces of ware coming from the kilns are of the B or C quality, and as the potteries have more or less difficulty in disposing of the poorer qnality of their wares it always left the market in a very nnsettled condition. We learn that an experienced man, who is thoronghly familiar with the trade, will be appointed by the different mannfacturers as an inspector, and will have the exclnsive say regarding the classification of the ware. He will say whether the ware is A, B or C qnality, and whatever he decides the goods will be sold at the price governing that class. It is believed that this scheme will bring about a more stable condition in the market, and as the demand for this class of ware is continually increasing and is at the present time mnch in excess of the production, it is believed there will be no difficulty in maintaining the prices adopted by the Potters' Association.

Enameled Bathtubs.—The Enameled Bathtub market still shows no change in prices. All of the smaller manufacturers are practically filled with orders to keep them running nntil the end of the year, and these orders have been taken at prices similar to those issued by the combination. The Standard Sanitary Mfg. Company are several months behind in their orders. They are tnrning out Tubs at the rate of 500 per day, and according to reports which are current in the trade, they are receiving orders for 600 Tubs a day.

Tin Cans.—The American Can Company on Jnly 25 advanced their prices as follows: Two-ponnd Cans, from $2 to $2.25; 3-pound, from $2.70 to $3, and gallons, from $6 to $6.70 per 100. Scarcity of Tin Plate, owing to the strike, is likely to cause further advances and perhaps a serions shortage of Cans.

Wire Nails.—Wire Nails from store in New York continue in satisfactory demand for the season. Qnotations are without change, small lots ruling at $2.60 per keg.

Cut Nails.—The demand for small lots of Cnt Nails keeps up in satisfactory volume. From store Cut Nails are quoted at $2.18 to $2.25 per keg, New York.

Wire.—A large demand for Wire continnes, and there is still some delay in getting prompt shipment. The mills, however, are not as far behind in orders as they were some time ago. Prices are firm and unchanged at 2.60 cents for Plain Wire in small lots and 3 cents for Galvanized.

Window Glass.—The demand for Window Glass in the local market is light. Stocks in mannfactnrers' and jobbers' hands are referred to as moderate and no weakness in prices is reported.

White Lead.—There is a fair amount of Lead in Oil going into consumption, notwithstanding the usnal midsummer dullness. Some of the mannfacturing plants have shnt down temporarily, owing to the high price of Linseed Oil and the uncertainty of the future market. No change in prices of White Lead has been made.

Linseed Oil.—The Linseed Oil market remains firm and manufacturers having Oil are inclined to sell only in jobbing lots for immediate and near future deliveries. The demand is moderate and confined to immediate re-

quirements. Raw Oil in small lots is quoted at 83 to 84 cents per gallon, and Boiled Oil is 2 cents per gallon advance on Raw.

Spirits Turpentine.--The market is quiet and prices have declined in sympathy with lower figures at Southern points. Orders are limited in size and confined to small lots, the large consumers not being in the market. Retail quotations are 37½ to 38 cents per gallon.

The Genesis of Slate.

A very great industry in North Wales, says an English contemporary, is the quarrying and preparation of slates. Slates are derived from one of the lowest or oldest series of sedimentary rocks which geologists distinguish in the earth's crust, the Cambrian. Underlying the Cambrian rocks is a still older series of rocks known, for want of a better term, as the Archæan, of the true origin of which there is still some uncertainty, but while the Cambrian rocks have been subjected to many changes, the Archæan rocks have retained their position more distinctly than any of the series of rocks which overlie them. During the cooling of the earth's crust, which has gone on since the Cambrian rocks were deposited on the floor of the ancient ocean, and by the repeated intrusion of masses of granite, trap and other igneous rocks, the Cambrian slate rocks were thrown against the older rocks and subjected to great pressure, which has been continued for a long period of time; the effect of this is now seen in the peculiar construction of the slates; this pressure has, it is thought, brought about the peculiar property of slate, of cleaving into thin sheets or plates. The pressure acting on the particles of the clay originally deposited as a soft plastic mass causes them to lie parallel to one another and thus to produce this cleavage property. Unless the rocks had been subjected to this pressure they would not have broken up into plates. The strata of the slate rocks are found in large folds and convolutions, and the plane of cleavage is found to lie parallel to the axis of these folds. When the slate rocks are examined under the microscope it is seen that their particles lie with their flat surfaces perpendicular to the direction in which the pressure was exerted. The cleavage into thin plates is most readily done soon after the mass of slate has been quarried; the longer it is exposed to the action of the weather the more difficult does it become to split it.

The materials from which the slate rocks are derived are those of common clay, silica and alumina, derived by the weathering of older rocks situated on a continent that existed, in former days, to the northwest, and these materials were carried down by rivers flowing from this continent to an ancient ocean covering the spot where the slates are now found. In the mutations of changes of the earth's crust the continent has sunk and become covered by the present ocean, while the bed of the ancient sea has been raised up into the present dry land. There are some chemical differences between different masses of slate rocks, and it is these differences to which one must look to account for differences of color and for the different wearing qualities of various slates.

TRADE NOTES.

THE AMERICAN METAL HOSE COMPANY of Chicago, Ill., have been incorporated by George H. Ennis, F. G. Frankenburg and C. C. Buell, with a capital stock of $10,000.

R. CLEMENS has been appointed superintendent of the Sad Iron Works at Canal Dover, Ohio.

THE SCRANTON CORUNDUM & EMERY WHEEL COMPANY, Scranton, Pa., are about to occupy new and larger premises at 1311 to 1315 Capouse avenue. They will put in new machinery and be equipped to do a considerably larger business. There has been a change in the officers of the company, who are now as follows: President, Col. Herman Ostraus; secretary, Otto Kacht, and treasurer and manager, J. W. Browning.

THE SUPERIOR MFG. COMPANY of Allegheny, Pa., were granted a charter on Monday, with a capital of $25,000. The concern will manufacture Natural and Artificial Gas Fixtures and will build an addition to their present works for the purpose of taking up other lines of manufacture.

The large foundry of the Abendroth & Root Mfg. Company of New York City, situated in the Greenpoint district of Brooklyn, was almost wholly destroyed by fire on Wednesday morning. The property, which was used by the company for the manufacture of iron pipe, occupied one whole block bounded by West, Oak, Franklin and Noble streets. The origin of the fire is unknown. The loss on stock, building and machinery is placed at about $68,000, which, it is said, is fully covered by insurance.

CONTENTS.

	PAGE.
Editorials—	
Exports of Manufactures	35
Aerial Navigation	35
The Drought	35
One Possibility of the Great Strike	36
Local Stove Associations and Prices	37
The Pittsburgh Stove & Range Company	37
Good Service by the International Heater Company	37
An Old Cook Stove	37
The Western Oil and Gasoline Stove Trade	38
Monogram Stoves and Ranges	38
The Steel Strike and the Stove Trade	38
Champion Monitor Steel Ranges	38
Increasing Furnace Trade	38
Odd Plates	39
The National Retail Hardware Dealers' Association	39
The Chicago Hardware Dealers' Picnic	40
The World's Only Sanitary Dustless Floor Brush. Illustrated	40
The Iron Age Removable Leaf Price Book. Illustrated	41
Monongahela Valley Retail Hardware Dealers' Association	41
Jenckes Ceiling Hook. Illustrated	42
Stove and Hardware Dealers	42
International Heaters at Chicago	43
Annual Outing of Wilkes-Barre Master Plumbers	43
Quality of Range Boilers	43
New York City Notes	43
Hot Air Furnace Heating. Illustrated	44
Lead Melting Furnace. Illustrated	45
The Drake Special Acetylene Generator. Illustrated	46
A Vacuum Plumbing System. Illustrated	46
Brooklyn Plumbers' Outing	47
Heating and Plumbing Notes	47
New Firms and Changes	49
The Sheet and Tin Plate Strike Situation	49
Envelope of Scalene Cone. Illustrated	50
The Tin Plate Production of Pennsylvania	51
The Smith-Warren Hollow Metal Window Frames and Sashes. Ill.	52
Architectural Sheet Metal Work	53
A New Method of Rolling Sheet Metal	54
Flashings	54
The Letter Box—	
Coating a Galvanized Tank	55
Reese's Soldered Standing Joint	55
Troubled by Wall Sweating	55
Will Pipe Covering Stop Sweating?	55
Account of Plumbers' Time	55
Rain Water Cut Off	55
Trade Report—	
Market Summary	56
Metal Market	56
The Pig Iron Market	57
Chicago Report	57
The Hardware Trade	58
Notes on Prices	58
The Genesis of Slate	59
Trade Notes	59
Metal and Miscellaneous Prices	60
Labor Exchange—	
Help and Situations Wanted	64

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED JULY 26, 1901

The following New York quotations are for small lots:

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots.....₩ lb, 37¢
100-lb lots.....₩ lb, 35¢

Aluminum Sheet, B. & S. gauge.
In lots of 50 lbs or more.

Wider than	6-in.	14-in.	24-in.
And including	14-in	24-in.	30-in.
	₩ lb	₩ lb.	₩ lb.
Nos. 13 to 19	$0.42	$0.44	$0.47
" 20	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24	.48	.50	.53
" 25	.47	.51	.54
" 26	.47	.54	.59
" 27	.48	.57	.62
" 28	.48	.57	.64
" 29	.49	.60	.69
" 30	.50	.64	.77

Note.—Lots of less than 50 lbs 5¢ ₩ lb extra.

Antimony—

Cookson.....₩ lb. 10½@11¢
Hallett's.....₩ lb, 8¾@9¼¢
U. S.....₩ lb, 8¾@9¼¢

Brass—Planished.....net

Roll and Sheet.....15@20% off

Brass and Copper Tubes

Brazed Brass Tubing—

Brown & Sharpe's Gauge the Standard.

List Feb. 26, 1896.

Plain Round Tube.	Per lb.	
¾-in. up to 2-in.	$0.35	30@35% off.
⅝-in. up to ¾-in.	.36	
½-in. up to ⅝-in.	.38	
⅜-in. up to ½ in.	.41	
5-16-in. up to ⅜-in.	.48	
¼-in. up to 5-16-in.	.65	
3-16-in. up to ¼-in.	1.00	
⅛-in. up to 3-16-in.	1.50	
Smaller than ⅛-in.	Special	
3-in. and larger	Special	
2-in. to 3-in. to No. 19, inclusive.	.38	

Copper & Bronze Tubing—

3¢ ₩ lb more than Brass.

Conductors—

Corrugated. *Round or Square.*—

Galvanized ½ or more, N'st'd.....70&5%
" Not Nested.....70&2½%
" Plain Round, ½ or more, Nested.....70&5%
Galvanized, Plain Round, Not Nested. 70&2½%

Spiral Riveted.

Galvanized.....40%
See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—See *Strainers, Conductor.*

Copper—

Lake Ingot.....17¼@17½¢
Casting.....16¼@17 ¢
Sheet and Bolt.....21¢ ₩ lb basis
Cold Rolled Sheets.....24¢ ₩ lb basis
Cold Rolled and Polished Sheets.....23¢ basis
Planished Sheets.....24¢ basis
Bottoms, Pits and Flats.....₩ lb 25¢ basis

Eaves Troughs—

List Feb. 1, 1895.

Lap or Slip Joint, Galvanized, in orates 75&10%

Eave Trough Mitres—

Lap or Slip Joint.....list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin.....30%
Galvanized.....30%
Perfect Elbows.....40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz
No. 2.	.65	.70	.75	.80	.85 "
No. 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Corrugated

Round or Square.

Galvanized.....60%

Gasoline—See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	₩ lb 3.75	3.80¢
Nos. 18 to 21	₩ lb, 3.85	3.90¢
Nos. 22 to 24	₩ lb, 3.95	4.00¢
Nos. 25 and 26	₩ lb, 4.05	4.10¢
No. 27	₩ lb, 4.15	4.20¢
No. 28	₩ lb, 4.25	4.30¢

Russia, Planished, &c.

Genuine Russia, according to assortment.....₩ lb 10½¢
Do. Stained.....6¢@10¢
Patent Planished. ₩ lb A, 9¾¢; B, 8¾¢ net

Galvanized.

Nos. 10 to 16	₩ lb, 12¢	62½&5@65% off
Nos. 17 to 21	₩ lb, 13¢	
Nos. 22 to 24	₩ lb 14¢	
Nos. 25 to 26	₩ lb, 15¢	
No. 27	₩ lb, 16¢	
No. 28	₩ lb, 17¢	
No. 29	₩ lb, 19¢	
No. 30	₩ lb, 21¢	

36 in. 1¢ ₩ lb higher

Kerosene—See *etroleum Products*

Lead—

American Pig.....4.60@4.62½¢
Bar.....5⅞@5¼¢
Pipe.....6½¢.....2½ off
Tin Lined Pipe.....12½¢.....20% off
Block Tin Pipe.....40¢.....20% off
Sheet Lead, full rolls...7¼¢.....20% off
Sheet Lead, cut.....7¾¢.....20% off
Old Lead in exchange, 4.50 ₩ lb.

Mitres, Eave Trough—See *Eave Trough Mitres.*

Nickel—

Per lb.....60@65¢

Paints, Oils, &c.—

Lead, White, Atlantic and Jewett's. 7¼¢
Lead. Amn. White, in oil.....7@7¼¢
Lead, Red. bbls. and ⅛ bbls.....7@7¼¢
Lead, Red, kegs.....7@7¼¢
Linseed Oil:
Raw, ₩ gal.....83@84¢
Boiled.....85@86¢

Spirits Turpentine:
In bbls.....37½@38 ¢
In cases.....45½@46 ¢

Putty:
In barrels and ½ bbls.....2½
In tin cans.....3½¢
In bladders.....2¾¢

Palm Oil. 1500 lb casks.

Fancy Lagos.....₩ lb 6 ¢
Clarified.....₩ lb 5¾¢
Accra.....₩ lb 5½¢
Half Jack.....₩ lb 5¼¢

Petroleum Products—

In Barrels (Barrel included)

Stove Gasoline.....₩ gal. 12½@13¢
Kerosene.....₩ gal. 13@13½¢

Pipe, Drain.....40%

Pipe, Spiral—See *Conductors*

Registers—

List Feb. 1, 1899.

Black Japanned.....50&10%
White Japanned.....40&10%
Nickel Plated.....50&10%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze.....40%
Electroplated in Brass, Bronze or Copper.....40%
White Porcelain.....20%
Solid Brass and Bronze Metal.....20%

Roofing Material—

Heavy Single Ply Tar Felt,.....₩ ton $30.00
2 Ply Roofing Felt.....₩ roll, 108 sq. ft. 65¢
3 Ply Roofing Felt....₩ roll, 108 sq. ft. 85¢
Roofing Pitch ₩ bbl.....$2 38

Rosin

(Barrels of 280 lb. Barrels weigh actually about 400 lb).

Common and Good—Strained.
Rosin, C. & D.....₩ bbl. $1.42½@$1.45
Rosin, E. & F.....₩ bbl. 1.65 @ 1.75
Rosin, G. & H.....₩ bbl. 1.80 @ 1.85
Rosin, I. & K.....₩ bbl. 1.95 @ 2.25
Rosin, M. & N.....₩ bbl. 2.75 @ 3.10

Seamless Brass Tubes—

Net List, February 0, 1899.

Shoes and Elbows—See *Elbows and Shoes.*

Slate Roofing—

According to size, f. o. b. cars, Quarry Station.

Pennsylvania:
Best Bangor, ₩ sqr.....$3.25@$4.50
No. 1 Bangor Ribbon, ₩ sq 3.00@ 3.50
Pen Argyle, ₩ sqr.....3.00@ 3.75
Peach Bottom, ₩ sqr.....4.85@ 5.60
No. 1 Boys, ₩ sqr.....3.35@ 3.55
No. 1 Chapman Keystone, ₩ sqr.....3.25@ 4.25
Vermont:
Sea Green, ₩ sqr.....$2.00@$3.00
Purple, ₩ sqr.....3.75@ 4.25
Unfading Green, ₩ sqr...3.25@ 4.50
Red, ₩ sqr.....6.50@11.00
Maine:
Brownville, Unfading Black:
No. 1 quality.....$5.25@7.50
No. 2 quality.....$4.25@6.00

Solder—

½&½ guaranteed.....19@19½¢
No. 1.....15 @17½¢
Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Concentrated Soldering Flux.
f.o.b. New York.
In barrels, ₩ lb.....4¢
Smaller quantities, ₩ lb.....5¢

Eureka Soldering Flux—Triple Strength
In barrels, ₩ lb.....3 ¢
Smaller quantities, ₩ lb.....3½¢

Eureka Soldering Flux—Extra Concentrated
In barrels, ₩ lb.....4½¢
Smaller quantities, ₩ lb.....5 ¢

Eureka Soldering Flux—Crystal.
In 100-lb cases, ₩ lb.....7¢

Gedney's Soldering Fluid.
In carboys or barrels, ₩ lb.....2¢
$1.50 for carboy or barrel; money refunded when returned.

Lennox Soldering Fluid.
In barrels, ₩ lb.....2¢
In carboys, ₩ lb.....3¢

Perfection Soldering Flux.
No charge for package.
Bbls. about 500 lb, ₩ lb.....3¢
½ bbls., about 300 lb, ₩ lb.....3½¢
Kegs, about 110 lb, ₩ lb.....3½¢
Kegs about 55 lb, ₩ lb.....4¢

Yager's Soldering Salts.
1 lb bottles, each.....60%
5 lb bottles, ₩ lb.....40%

Soldering Coppers—

Per lb.....22@24¢

Spelter—

Western Spelter.....4.45@4½¢

Spiral Pipe—See *Conductors.*

Stove Pipe Elbows—See *Elbows, Stove Pipe.*

Stove Trucks—See *Trucks, Stove*

Strainers, Conductor—

Galvanized.....50%

Tin Pigs and Bars—

Banca, pigs, ₩ lb.....28¼@28½¢
Straits, pigs, ₩ lb.....28 @28¼¢
Straits, in bars, ₩ lb.....28¾@29 ¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:
IC, 14 x 20.....$8.25
IX, 14 x 20.....9.75
IXX, 14 x 20.....11.00
IXXX, 14 x 20.....12.25
IXXXX, 14 x 20.....13.50

Melyn Grade:
IC, 14 x 20.....7.75
IX, 14 x 20.....9.25
IXX, 14 x 20.....10.50
IXXX, 14 x 20.....11.75
IXXXX 14 x 20.....13.00

Allaway Grade:
IC, 14 x 20.....6.75
IX, 14 x 20.....7.85
IXX, 14 x 20.....8.95
IXXX, 14 x 20.....10.05
IXXXX, 14 x 20.....11.15

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight } IC, 14 x 20.....$6.15@6.25
" " IX, 14 x 20.....$7.10@7.25

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:
100 lb.....15¢
95 lb.....20¢
90 lb.....25¢
85 lb.....30¢

Terne Plates—

N. B.—The following prices are for IC, 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 lb coating and $2.50 to $3.00 advance for 15 lb and upward.

About 40 lb coating.....$17.50@18.00
About 30 lb coating.....16.75@17.25
About 20 lb coating.....14.75@15.25
About 15 lb coating.....12.75@13.25
About 8 lb coating.....11.50@12.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets).....$15.00
IXX, 14 x 28..(112 sheets).....16.00
IXX, 14 x 31..(112 sheets).....17.50

Troughs Eave—See *Eave Trough*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00
Steel Lock Frame, per doz.....18.00
Daisy Improved pattern, ₩ doz...18.00

Tubing—

Tin.....50% | Galvanized.....50%
Fittings for do.....40%

Zinc—

600 lb casks ₩ lb.....6¾¢
Per lb.....7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Fittings—

List of Oct 7, 1899

Cast Iron Fittings, Black and Galvanized, Standard sizes.....60@60&10
Cast Iron Bushings and Plugs....65@65 2½%
Cast Iron Flanges.....65@66⅔%
Malleable Iron Fittings.....50&5@55%
" " Bushings.....65@66⅔%
" " Unions.....65@66⅔%
Wrought " Nipples.....65@66⅔%
" " Couplings.....65@66⅔%
" " Long Screws.....65@66⅔%

Cast Iron Soil Pipe—

List Feb. 25, 1901.
2 to 6 inch inclusive.

Standard.....55&10@60%
Extra Heavy.....65@65&10%
All Fittings.....70&5@70&10%

Merchant Wrought Iron Pipe—

List Feb. 15, 1900
Random Lengths.

	Black	Galv
⅛ to ¼ inch	50&5%	40%
⅜ to 10 inch	60%	40&10@50%
11 and 12 inch	50%	35%

Extra Strong Pipe—

Random Lengths

	Black	Galv.
⅛ to ¼ in.	45%	30%
⅜ to 2 in.	45%	30%
2½ to 8 in.	45%	30%

Valves Cocks, &c.—

Iron Body Valves.....65&5@70%
Air Cocks and Radiator Air Cocks.....70@70&5%
Soldering Unions.....70@70&5%
" Nipples.....70@70&5%
Brass Unions (Rough and Finished)..65&5@70%
Jenkins Bros.':
Iron Body Valves, except Gate Valves 55%
All Iron Valves, except Gate Valves.. 40%
Iron Body Gate Valves.....50%
All Iron Gate Valves.....35%
Iron Cocks, all Iron.....60&10%
" " with Brass Plugs.....60%
Brass Globe, Angle and Cross Valves.. 65@65&10%
" and Angle Valves, hose outlet.....65@65&10%
Brass Garden Hose Valves....65@65&10%
" Horizontal, Vertical and Angle Check Valves.....65@65&10%
Brass Safety Valves.....55%
" " " Low Pressure...55%
Brass Radiator Valves.....65@65&10%
" " Jenkins.....55%
Brass Jenkins' Globe, Angle, Cross and Corner Valves.....55%
Brass Jenkins' Safety and Check Valves.....40%
Brass Jenkins' Gate Valves.....50%
Brass Steam Cocks.....65@65&10%
" Gas Meter and Union Meter Cocks.....65@65&10%
Brass Fittings, Rough.....65@65&5%
" " Finished.....65@65&5%
" Bushings.....65@65&10%

Plumbers' Brass Work—

List of December 7, 1890.

Ground Key Work:
Rough Bibs and Stops.....65@65&5%
Finished Bibs.....60@60&5%
Rough Stop and Stop and Waste Cocks.....65&5@70%
Rough Stop and Stop and Waste Cocks, Patented.....60@60&5%
Compression Bibs.....65@65&5%
" " Flanged.....70%
Compression Bath Cocks and Double Bath Cocks.....65@65&5%
Compression Basin Cocks.....65@65&5%
Fuller Bibs.....70@70&5%
Fuller Basin Cocks, Nos. 1 to 4.70@70&10%
Fuller Bath Cocks, No. 4½.....$2 25 net
Chain Stays.....60@60&5%

Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face	₩ set $1.00	$1.10
Ground Face	₩ set $1.05	$1.15

Basin Plugs.....60@60&10%
Sink or Bath and Wash Tray Plugs.....60@60&10%
Basin Clamps.....70@70&10%

Bath Tubs—

Cast Iron Enamelled Bath Tubs.
List of March 26, 1900.
Regular Patterns. Guaranteed. Complete Line.....30&10@40%
All High Grade and Special Pattern (except as below).....20%
"Diana" and "Brighton."".....20%
Non-Guaranteed Brands, complete line.....40%
Steel Clad Copper Lined Bath Tubs, list of Feb. 1, 1899.....45@50%
Soil Porcelain Bath Tubs.....20%
Solid Copper, list of Feb. 1, 1899.....20%

Boilers—

Standard Boilers:
30 gal.....65@65&10%
35 and 40 gal.....65@65&5%
Other sizes up to 52 gal....50&10@60%
52 gal and above.....50&10@60%
Extra Heavy Boilers:
18 to 52 gal.....50&10@60%
53 gal. and above.....40&10@45%

Sinks—

	Cast Iron—Black.	Galv.
Sinks, Square, Half Round and Corner	50&5%	50&10@60%
Sink Legs	50&5%	50&10@60%
Sink Backs	50&5%	50&10@60%

Wrought Steel—

New Era, Galv'd and Enameled...70&5%
New Era, Painted.....50&10%
L. & G.....50%

Miscellaneous—

Earthenware, List of July 17, 1899.....
Basins, Urinals and Honners.....40%
Closet Bowls, Sundries, Washouts and Pedestals.....40%
Drawn Lead Traps, List of June 3, 1901.....40&10@50%

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Berger Mfg. Co 74
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Bliss, E. W. Co., Brooklyn, N. Y.
Toledo Mach. & Tool Co., Toledo, O.

Dumb Waiters.
Energy Elevator Co., Phila., Pa.

Eave Troughs.
Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Co., Canton, O.
Clark, Quien & Morse, Peoria, Ill.
Eller, J. H. & Co., Canton, O.
Marlin & Co., Pittsburgh, Pa.

Eave Trough Hangers.
Berger Bros. Co., Phila., Pa.
Berger Mfg. Co., Canton, O.

Eave Trough Machines.
Canton Machine & Mfg. Co., Canton, O.
Marlin & Co., Pittsburgh, Pa.

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Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
Reeves Mfg. Co., Canal Dover, O.

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Hanson & VanWinkle Co., Newark, N.J.
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National Enameling & Stamping Co., 78 Beekman St., N. Y.

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Clark Novelty Co., Rochester, N. Y.
Litchfield, J. M., 105 Beekman St., N.Y

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Presbrey Stove Lining Co., Taunton, Mass.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

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Burgess Soldering Furnace Co., Columbus, Ohio.
Clayton & Lambert Mfg. Co., Detroit, Mich.

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Troy Nickel Works, Troy, N. Y.

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Stuber & Kuck, Peoria, Ill.

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Perkins, J. L. & Co. Chicago.

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Meyer, F. & Bro. Co., Peoria, Ill.
Osborn, J. M. & L. A., Cleveland, O.
Safety Furnace Pipe Co., Detroit, Mich.
Schaffer, Jno. P., Pittsburgh Pa.

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Barstow Stove Co., Providence, R.I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
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Brand Stove Co., Milwaukee, Wis.
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Dean Boiler Co., Boston, Mass.
Dighton Furnace Co., Taunton, Mass.
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Graff Furnace Co., 208 Water Street, New York.
Hart & Crouse Co., Utica, N. Y.
Howes, S. M. Co., Boston, Mass.
International Heater Co., Utica, N. Y.
Keeley Stove Co., Columbia, Pa.
Kelsey Furnace Co., Syracuse, N. Y.
Lennox Machine Co., Marshalltown, Iowa.
Magee Furnace Co., Boston, Mass.
Meyer, F. & Bro. Co., Peoria, Ill.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
Noyes & Nutter Mfg. Co., Bangor, Maine.
Reading Stove Works, Reading, Pa.
Richmond Stove Co., Norwich, Conn.
Schaffer, John P., Pittsburgh, Pa
Schwab, R. J. & Sons Co., Milwaukee, Wis.
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Tubular Heating and Ventilating Co., Phila., Pa.
White-Warner Co., Taunton, Mass.
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National Enameling & Stamping Co., 78 Beekman St., N. Y.

Groovers.
Wheeler, W. A., Indianapolis, Ind.

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Boynton Furnace Co., 207 Water St., N. Y.
Dean Boiler Co., Boston, Mass.
Dighton Furnace Co., Taunton, Mass.
Drake, W. H., Newark, N. J.
Gorton & Lidgerwood Co., 96 Liberty St., New York.
Gurney & Co., Boston, Mass.
Gurney Heater Mfg. Co., Boston, Mass.
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International Heater Co., Utica, N. Y.
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Magee Furnace Co., Boston, Mass.
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Smith & Thayer Co., Boston, Mass.
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Excelsior Tool & Mch. Works, St. Louis, Mo.
Garvin Machine Co., 257 Spring Street, New York.
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SEE ALPHABETICAL INDEX, PAGE 61.

Miner & Peck Mfg. Co., New Haven, Conn.
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Montross Metal Shingle Co., Camden, N. J.

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Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

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Gunster & Forsyth, Scranton, Pa.

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Clason Arch. Metal Works, Providence, R. I.

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Meurer Bros. Co., Brooklyn, N. Y.
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Gurney & Co., Boston, Mass.
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Michigan Stove Co., Chicago, Ill.
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Richmond Stove Co., Norwich, Conn.
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SEE ALPHABETICAL INDEX, PAGE 61.

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Newsdealers or Booksellers in any part of the world may obtain *The Metal Worker* through The American News Company, New York, U. S. A.; The International News Company, New York, U. S. A., and London, England; or The San Francisco News Company, San Francisco, Cal., U. S. A.

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By a practical STEAM and HOT WATER FITTER and PLUMBER; am strictly sober, married, and have had over 25 years' experience. "E. C. T.," care *The Metal Worker*, New York. July 27

By a first-class TIN and SHEET IRON WORKER; can cut patterns, do pipe fitting, some plumbing; A1 bench hand; strictly temperate; best of reference; would like to take charge of an estate or factory. Geo. Keegan, 63 Court House Pl., Jersey City, N. J. July 27

First-class PLUMBER, 10 years' practical experience, desires a steady position in any part of the United States; can furnish A1 reference. James P. Goodsill, care C. P. Erlenback, 210 East Fifty-seventh street, New York. July 27

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By young man, PLUMBER, with some knowledge of tin roofing and spouting; sober and reliable; single, unencumbered; can go anywhere. "F. R. P.," Plumber, Perry, Wyoming County, N. Y. July 27

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By a strictly sober and reliable TIN and SHEET IRON WORKER, experienced at in and outside work, spouting, wind mill, steam fitting, and general knowledge of plumbing; will work for $10 per week by the year; references. "G. S.," South Deerfield, Mass. July 27

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By an experienced SALESMAN, a position with some good house; have had 15 years' experience in hardware, tinware, stoves and house furnishing goods; can speak German and English. "German-American," care *The Metal Worker*, New York. July 20

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By a strictly temperate and reliable STEAM and HOT WATER FITTER, a steady position with a reliable house heating firm; have had 15 years' experience. Frank Pierce, General Delivery, Worcester, Mass. July 20

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By a practical iron foundry FOREMAN of 40 years' practical experience in stove plate and light grade of castings; first-class reference as to ability. "S. G.," Box 140, Glenside, Pa. July 20

First-class PLUMBER; city or country; country preferred. Thomas McCarthy, 1000 Fulton street, Brooklyn, N. Y. July 20

With some wholesale or retail establishment; have had ten years' experience in retail hardware, stoves, implements and tinshop, and am anxious to advance along this line; am 30 years of age, married and of steady habits; best references. Box 74, Anna, Ohio. July 20

By a first-class PATTERN CUTTER and SHEET METAL WORKER; 13 years' experience at blower and exhaust mill work, heating and ventilation; competent to take charge. "Pattern Cutter," care J. Day, 617 North Fifth street, Camden, N. J. July 20

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By a first-class, all around TIN and SHEET IRON WORKER; 15 years' experience in all branches of trade; capable of estimating; practical draftsman; long experience; strictly sober and honest; married man; steady work wanted for one year, city or country; wages moderate. C. M. Hartwick, Keyport, N. J. July 20

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DECISION OF THE UNITED STATES CIRCUIT COURT

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from other goods, containing either

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The Court, limiting its decision to the use of the label only, rules as follows, under date of April, 15, 1901: "Complainants may take a preliminary injunction against the use of the labels, Exhibit G (of the ***National Enameling and Stamping Co.***) or of any similar labels, which by the collocation of size, colors, shape, spacing and lettering may present as close a resemblance to complainants' label Exhibit F (see copy of label adjoining) as do the said labels. Exhibit G (on Granite Ware)."

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The trade is hereby notified that any sales of the so-called "Granite Iron or Steel Ware" under labels like our rectangular labels referred to in above decision, is a direct infringement of our rights as established by the above adjudication and entitles us to claim damages.

Notwithstanding reports to the contrary, we are ***NOT*** members of any "Trust" or "Association," nor have we entered into any "Gentlemen's Agreement" regarding prices on Tinned, Galvanized, Japanned or Enameled Wares, or any other goods we manufacture.

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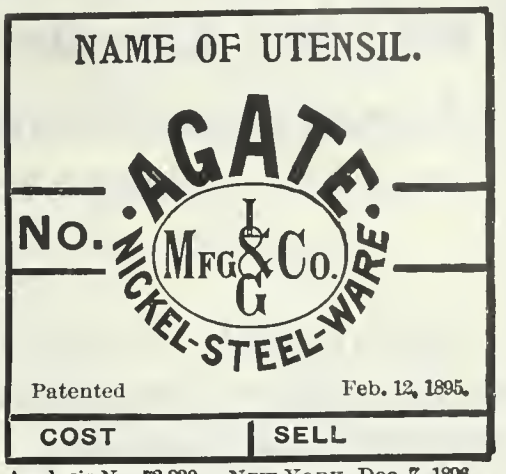

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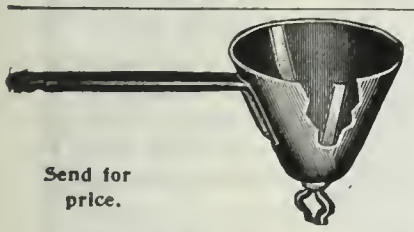

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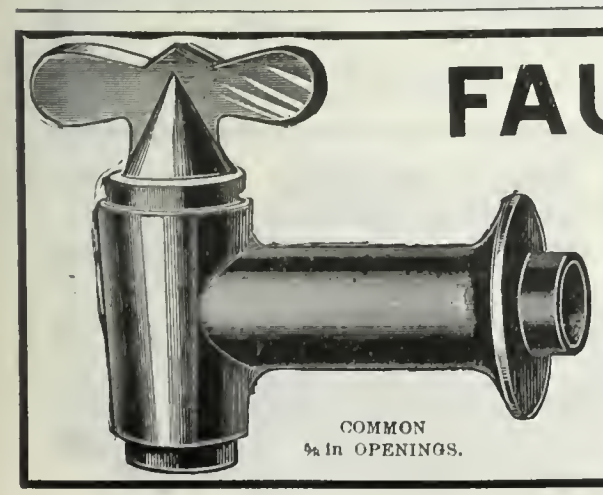

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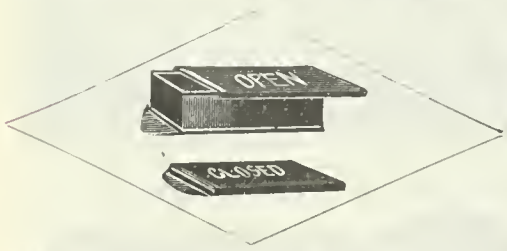

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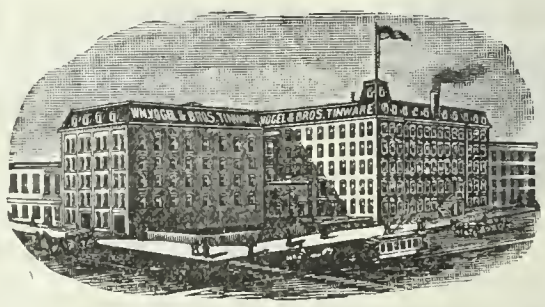

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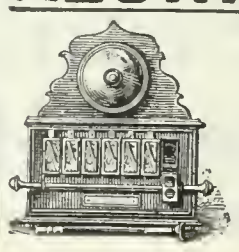

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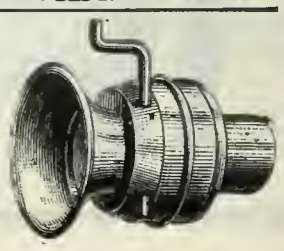

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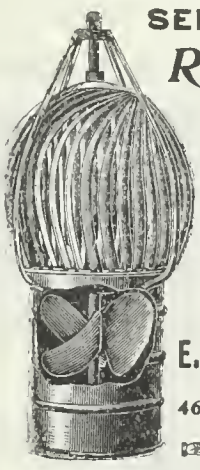

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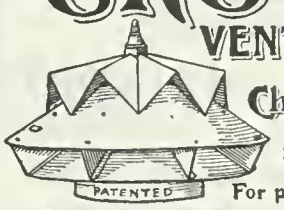

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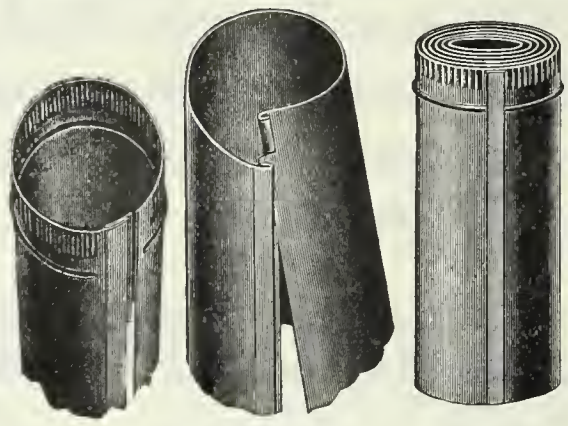

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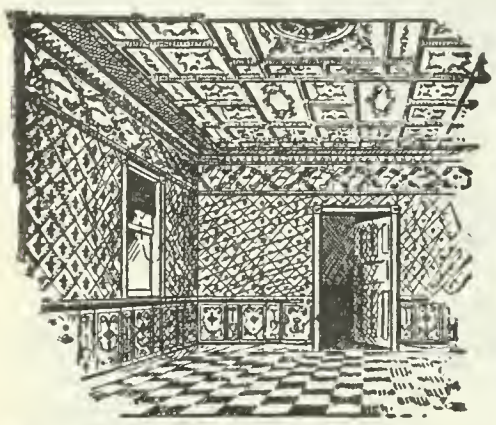

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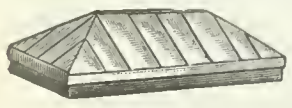

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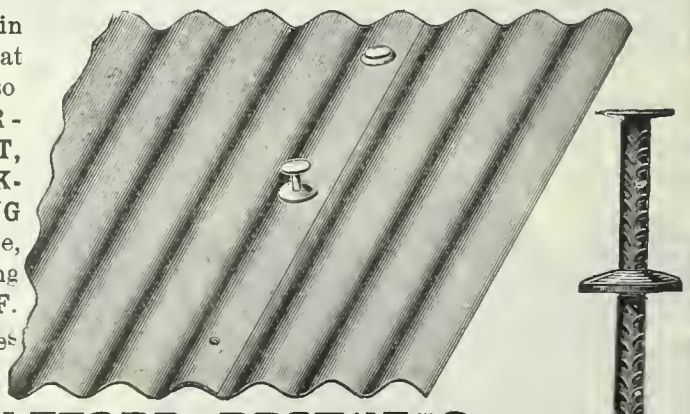

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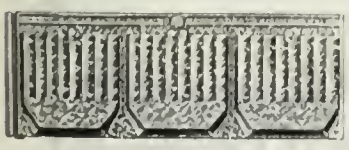

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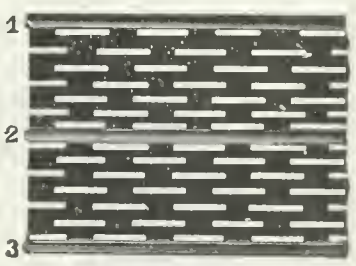

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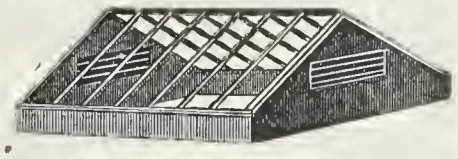

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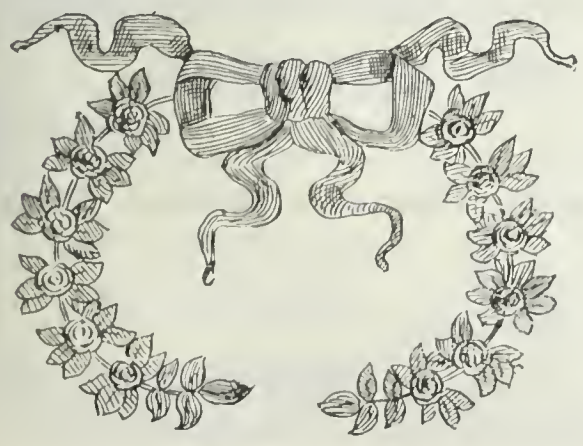

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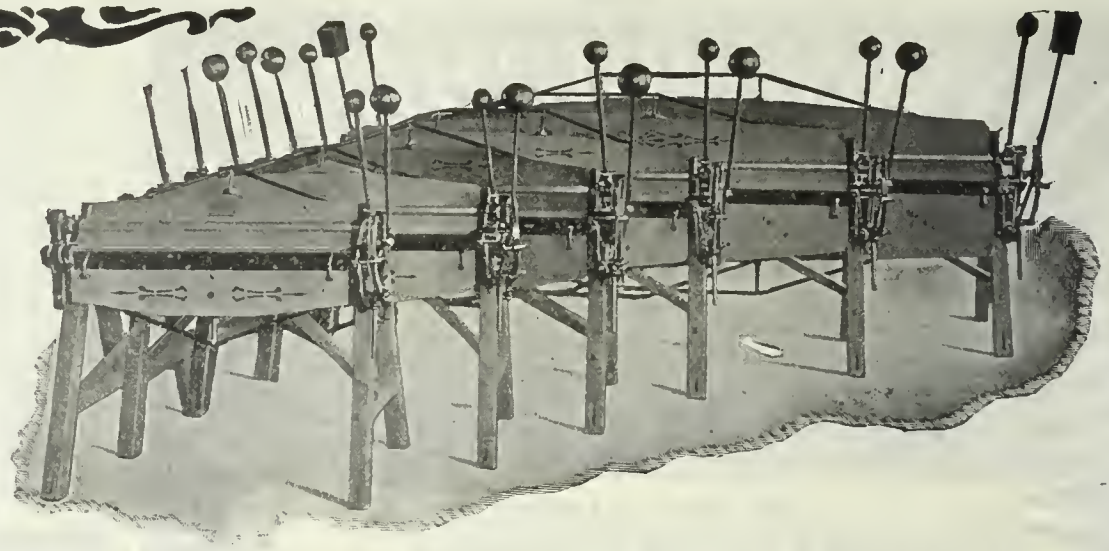
Girgle: "Oh, go to sleep!"—*Harlem Life.*

The Double Truss Cornice Brake.



All the different sizes in which we make this practical machine are herewith illustrated.

This brake costs only half as much as an all-metal brake.

It is made mostly of hard maple.

It is just as good as an iron brake in every respect—much better in some ways. Beside the 50% saved in the first cost our brake will save money in its use.

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By shaping or bending work in the building where it is to be used all the trouble and expense of handling formed-up work is saved.

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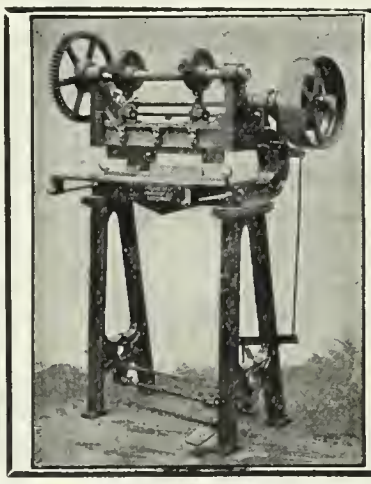

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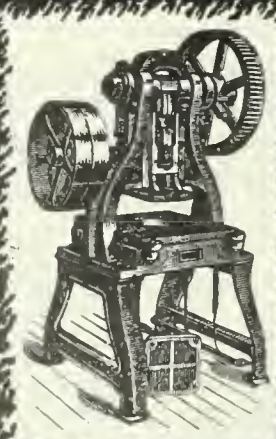
EXCELSIOR TOOL & MACHINE WORKS
212-214 SPRUCE ST. ST. LOUIS, MO

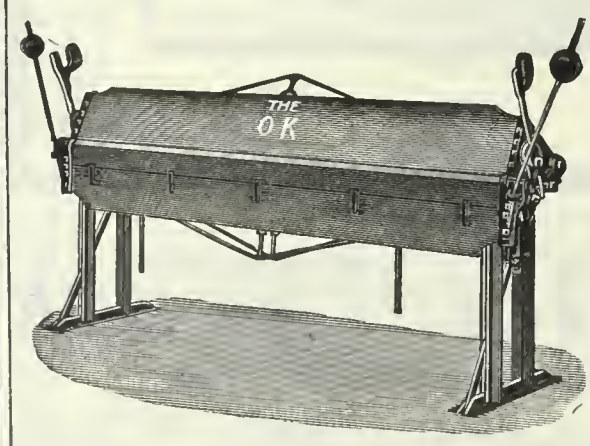
THE FRED. J. SWAINE CO.

PRESSES. DIES.



Rolls Seamers. Sheet Metal Tools.

930-932 NORTH MAIN ST. St. Louis, Mo.



The O. K. Steel Brake.

PRICES FOR OUR REGULAR SIZES:

No.	Gauge it will Form Full Length.	Length on Forming Edge.	Price.
1	16	12 ft. 1 in.	$300
2	16	10 ft. 1 in.	225
3	16	8 ft. 1 in.	150
4	22	8 ft. 1 in.	100
5	12	4 ft. ½ in.	75
6	16	4 ft. ½ in.	60
7	22	4 ft. ½ in.	50

Formers on cornice brakes included.

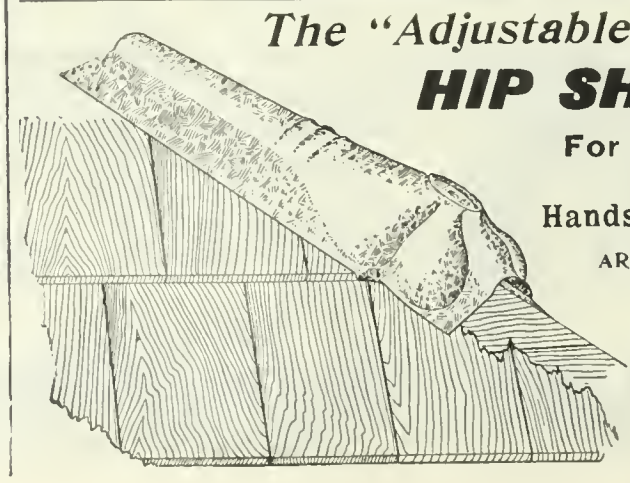
Discount and particulars on application.
Brakes for steel range work or other specialties to form up material from 10 gauge up.

Dreis, Andrews & Krump,
Successors to O. K. MFG. CO.,
3039 & 3041 South Halsted Street, CHICAGO, ILL.

The "Adjustable" Stamped Metal

HIP SHINGLE.

For Shingle or Slate Roofs.



Handsome. Durable. Cheap.

ARCHITECTS ENDORSE THEM.

SOLD TO DEALERS ONLY.

MANUF'D BY

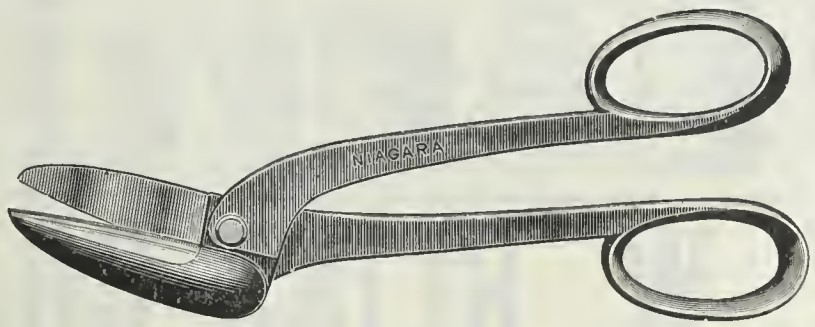
Galesburg Cornice Works,

GALESBURG, ILLS.

—MOTHER: "You don't know how you worry me, dear; why, my hair is turning gray!"

FLORRIE: "My! How you must have worried grandma; her hair is all white!"—*Exchange.*

HAND SHEARS FOR SLITTING LONG SHEETS.



Niagara Hand Slitting Shears are distinguished from ordinary Tinners' Shears through the peculiar shape and arrangement of the jaws and handles. The lower jaw is relieved to allow the material to pass by. Both of the handles remain above the work while cutting. A sheet of any length can be cut apart without trouble and injury to the hands of the operator.

Adapted to cutting apart long sheets, cutting corrugated sheets lengthwise, and handy in taking up and repairing metal roofing. Drop forged of best wrought iron and with steel-laid jaws, carefully tempered. Made by

NIAGARA MACHINE & TOOL WORKS, Buffalo, N. Y.

Mfrs. of SHEET METAL TOOLS.

THE PECK, STOW & WILCOX CO.,

HARE'S FOUR LEAF CORNICE BRAKE.

Hundreds sold and **never a complaint.** Works easily and rapidly. The universal verdict is, **IT IS THE BEST IN THE WORLD.**

96 inches long.

New York,
—AND—
Cleveland, Ohio.

Tinsmiths' Tools of the Highest Grade.

Our *Improved Eureka Cornice Brake.* Will bend No 20 iron.

96 inches long.

CORNICE MAKERS' SQUARING SHEARS.
With Lever Arc, Automatic Gauge. Will cut No. 22 iron.
97 inches long.

1865 **WE MANUFACTURE** **1901**

METAL WORKING MACHINERY

That is unequalled in design and workmanship,

CONSISTING OF

Lathes, Planers, Shapers, Drill Presses, Punch Presses Milling Machines, Screw Machines, Profilers, Tappers, Surface Grinders, Cutter Grinders, Etc., Etc.

Large Stock. *Send for Catalog, It will interest you.* **Prompt Deliveries.**

THE GARVIN MACHINE CO.,

51 No. 7th St., PHILA., PA. 257 Spring St., NEW YORK.

SHOVEL MACHINERY

We build complete equipments and control the latest patented machines for this work.

TIN CAN MACHINERY.

We make the very latest improved machinery for manufacturing cans and pieced tinware.

STEEL RANGE MACHINERY.

Recognized leaders for machinery and dies for oil and gas stoves, and gas and steel ranges.

For further particulars write

THE TOLEDO MACHINE & TOOL CO., Toledo, Ohio, U. S. A.

SELIG-SONNENTHAL & CO., Agts , London, England.

PHILADELPHIA MACHINE TOOL CO.,

445–449 North Darien St., Phila.

PRESSES & SHEARS

CORNICE MACHINERY, ETC.

COPPER Lightning Rods ...

Absolute Protection from **Lightning** is given by use of our continuous copper conductors

E. G. WASHBURNE & CO.,

Telephone, 3125 Cortlandt. **46 Cortlandt St. New York.**

Work put up or material furnished.

E. W. BLISS CO.,

MAIN OFFICE: 16 ADAMS ST., BROOKLYN, N. Y.

European Headquarters: 12 Ave. De La Grande Armee, Paris, France.

Designers and Builders of Presses, Dies, Shears, Slitters, Double Seamers, Crimpers, etc., etc., for working all kinds of Sheet Metals.

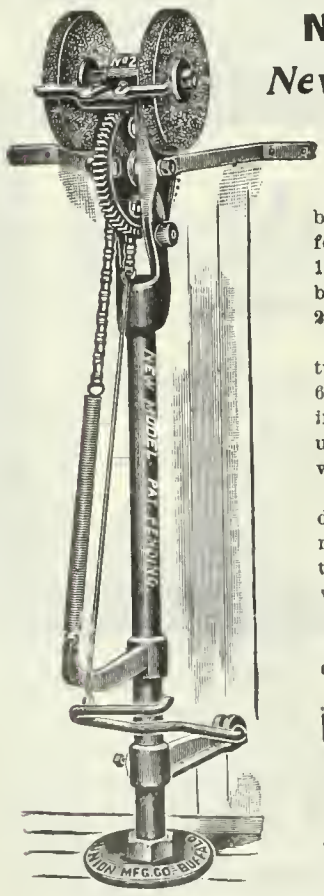
A few of the many articles for which we make the complete machinery for producing are shown in the accompanying cuts.

ALSO OWNERS OF **THE STILES & PARKER PRESS CO.**

UNION TOOL GRINDER NO. 2.

New Model.

(PAT. PEND. 1900)



This machine embodies all the good features of our No. 1. All gear driven, ball ratchet, speed 2 to 4 thousand.

Furnished with two emery wheels, 6 x ¾ steel shaft, 1 in. tubing for column. Shipping weight 35 lbs.

Plumbers, stove dealers and repair men will find this tool a very good investment.

PRICE $8.00, NET.

Ask your dealer or write direct.

Union Mfg. and Specialty Co.,

PATENTEES,

20 Breckenridge St.

BUFFALO, N. Y.

GEO. A. OHL & CO.,

157, 159, 161 ORATON ST., NEWARK, N. J.

(TELEPHONE 873.)

Mfrs. of All Kinds of

Metal Workers' Machines,

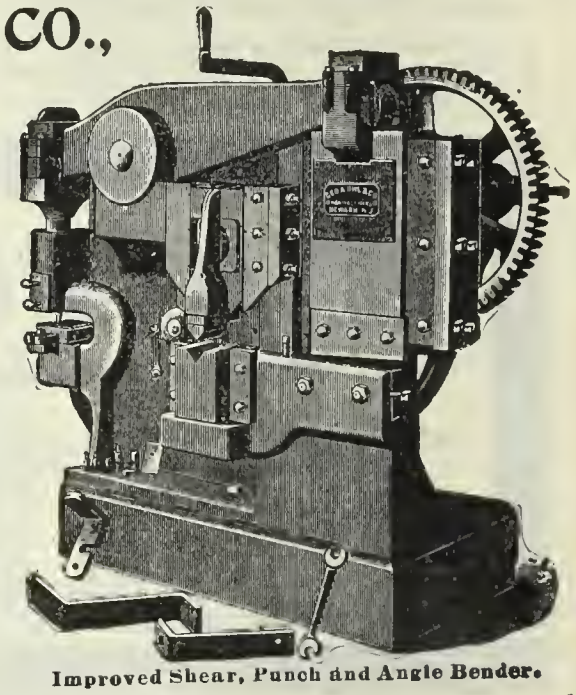
BRAKES

(all sizes),

Heavy and Light

Squaring Shears,

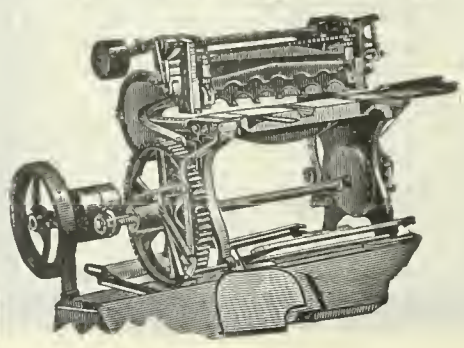
Punches, Presses, Sheet Steel Lath Machines, Drop Presses, Draw Benches, and *SPECIAL MACHINERY* of all descriptions.



Improved Shear, Punch and Angle Bender.

POWER SHEAR

For Squaring, Trimming and Slitting No. 6 0⅜ Plates and lighter Gauges. Made in Lengths up to 11 ft.



The most practical and powerful shear on the market. Has all improvements. Write for circulars descriptive of this and 100 other sheet metal working tools.

BERTSCH & COMPANY,

CAMBRIDGE CITY, IND., U. S. A.

Agents: MERCHANT & CO., Philadelphia, Pa.

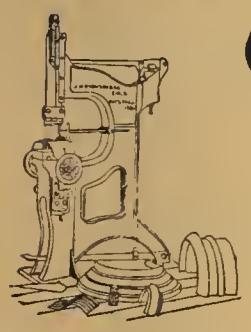
—HE WENT.—"I suppose you'll take in the Buffalo Exposition," said Mr. Borem.

"I think not," replied Miss Sharpe, suppressing a yawn.

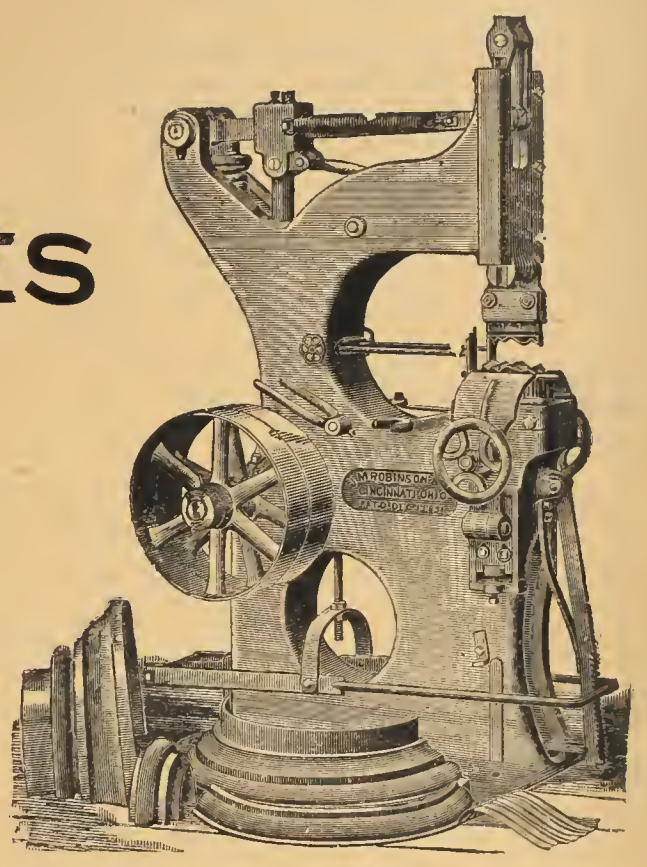
"No? Well, I simply must go, for——"

"Oh! Must you, really? Gracious! It is late, isn't it? I had no idea!"

SHEET METAL WORKING MACHINERY



CURVED MOLDING MACHINES

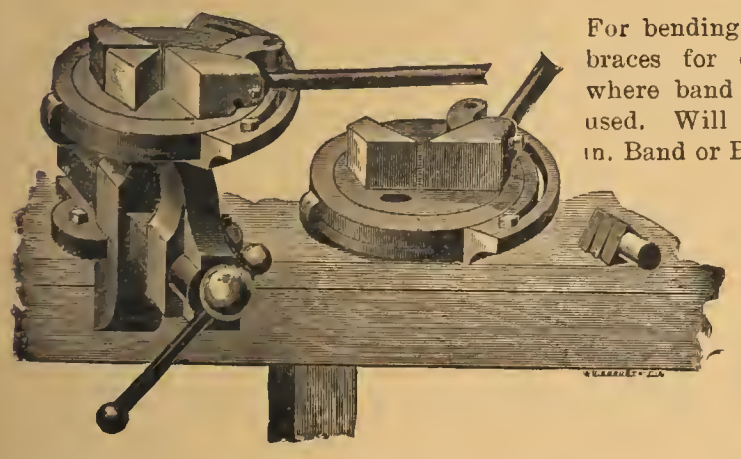


For making every style of sheet metal curved moldings quickly, cheaply and accurately. The hammer gives a perpendicular blow entirely preventing the drawing or twisting of the material while being formed.

The James M. Robinson Mfg. Co

325-331 W. SECOND ST., CINCINNATI, O.

A New Bending and Forming Tool



For bending and forming stays and braces for cornice or other work where band iron or steel are to be used. Will bend any shape ¼ x 2 in. Band or Bar.

THE KEENE BRAKE,

AND SHEET METAL WORKING MACHINERY A SPECIALTY.

GEORGE C. KEENE & CO., - Cincinnati, O.

U. T. HUNGERFORD BRASS and COPPER CO.

Office and Salesrooms, 121 Worth St., bet. Centre and Elm Sts., NEW YORK.
Warehouse and Shipping Dept. (Annex), 57 and 59 Elm St.,

SEAMLESS BRASS AND COPPER TUBING.

All sizes from 1-8 in. to 9 in. diameter.

SHEET COPPER, COPPER BOLT, COPPER NAILS, TOBIN BRONZE SHEETS, CIRCLES, PLATES AND RODS.

We carry in stock a general line of Brass and Copper in Sheets, Rolls, Rods, Wire, Rivets, Nails, &c.

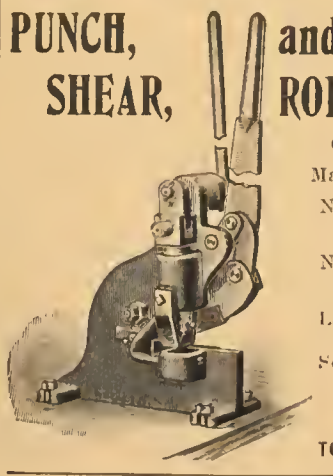
Our large and well-assorted stock (aggregating over 1,000,000 lbs.) enables us to fill orders promptly.

IMPROVED
Patent Automatic Can Body Double Lock Seaming Machines.

COMBINATION Presses and Dies, Sheet Metal Tools, &c.

W. J. GORDON
218 New Street
PHILADELPHIA, PA.

PUNCH, SHEAR, and... ROD CUTTER



COMBINED.

Made in 2 Sizes.

No. 1 Punches and Shears ¼ in. Flat, ¾ in. Rods
No. 2 Punches and Shears ¼ in. Flat, ⅝ in. Rods.
Larger sizes made to order.

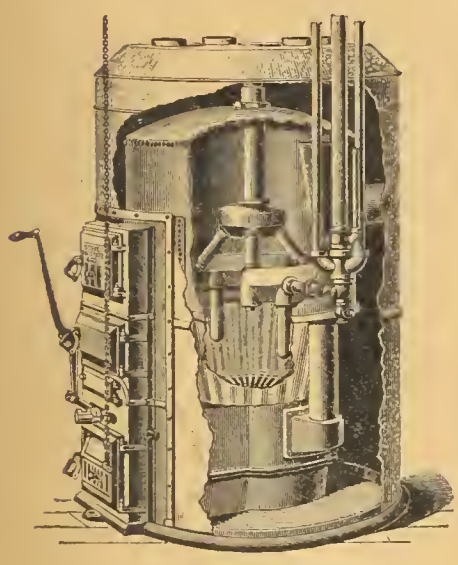
Send for Prices.

R. M. CLOUGH,
TOLLAND, - CONN.

—JUST TWO GIRLS.—Dolly: "Could any one be worse than a man who will be spooney in spite of all you can do?"
Polly: "Yes, one who won't."—*Life.*

—AT THE HEAD OF THE LIST.—Askit: "Whom do you regard as our greatest writer of fiction?"
Tellit: "The weather man."—*Baltimore American.*

An Ideal Warming



BAY STATE.

apparatus provides for the introduction and distribution of fresh warm air and can be secured by using a

BAY STATE COMBINATION HEATER.

Manufactured Only by

BARSTOW STOVE COMPANY,

BOSTON, 55 Portland St.,
PROVIDENCE, R. I.,
NEW YORK, Beekman and Water Sts.

The quality of the

"Taylor Old Style"

brand Roofing Tin has never been influenced by competition.

N. & G. TAYLOR CO.,

Established 1810,

Manufacturers of Tinplate,

PHILADELPHIA.

Lighted by Frink Reflectors.

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PITTSBURGH.

I. P. FRINK, 551 Pearl St., New York.

L. & R. WISTER & CO.,

Bullitt Building, Philadelphia.

Dunbar Foundry Pig Iron.
Dunbar Connellsville Coke for Foundry Use.
American Sheet Iron Co.'s Sheet Iron.
American R. G., cleaned of uniform black color.
Dealers in all kinds of Iron and Steel Scrap

BRUCE & COOK.

TINNERS' TOOLS and MACHINES.

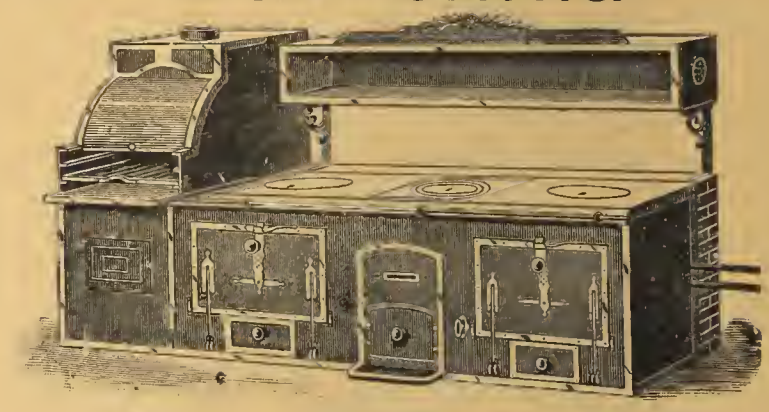
TINNERS' SUPPLIES.

186, 188 & 190 Water Street, and
248 & 250 Pearl Street,
NEW YORK

UTICA PIPE FOUNDRY CO.

"UTICA PIPE IS THE BEST." Cast Iron Soil Pipe. Cast Iron Water Pipe Plumbers' Supplies and Lead Pipe.
CHARLES MILLAR & SON CO., Selling Agents, Utica, N. Y.

HOTEL AND RESTAURANT KITCHEN OUTFITS.



French Ranges, Broilers, Carving Tables,
Stock Kettles, Tea and Coffee Sets,

And every requisite for the complete furnishing of any size Hotel or Restaurant Kitchen.

SMITH & ANTHONY COMPANY,

SEND FOR OUR 120 PAGE CATALOGUE. BOSTON.

Don't Sell Cheap

goods, just because they are cheap. One thousand dollars in Glenwood sales brings more future business, more clean profits, more real satisfaction than five times the amount done in shoddy. Sell

GLENWOODS.

Weir Stove Company, Foundry at Taunton, Mass.

W. S. Ray Mfg. Co., San Francisco, Cal.
Jacob Retterer, Chicago, Ill.

INCREASING DEMAND TELLS THE STORY . . .

McCLURE'S GENUINE CHARCOAL IRON REDIPPED ROOFING TIN

McCLURE & CO.

Manufacturers of Tin Plate,

PITTSBURGH, PA. 211, 213 and 215 Second Ave.
PHILADELPHIA, PA. 115 North 7th Street.

Index to Reading Matter, Page 59. Index to Advertisements, Pages 61 - 63.

The Metal Worker

A WEEKLY JOURNAL OF THE ROOFING, CORNICE, STOVE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

VOL. LVI. NUMBER 5. NEW YORK AND CHICAGO, AUGUST 3, 1901. ONE DOLLAR A YEAR. SINGLE COPIES 5 CENTS.

Albany, N. Y., Aug. 3, 1901.

Messrs. STOVE MEN:

Gentlemen.—I am now the sole owner of the Newton & Co. Fire Brick and Stove Lining business, having bought the entire plant, including moulds, stock on hand and all appliances necessary for the successful manufacture of Stove Linings and Fire Brick.

I solicit your valued trade.

Yours respectfully,

WILLIAM M. NEWTON.

The Gorton Side Feed Boilers

FOR STEAM AND HOT WATER HEATING.

INVESTIGATE FOR YOURSELF.

Send for Catalogue and Prices.

GORTON & LIDGERWOOD CO.,

96 Liberty St., NEW YORK. Old Colony Bldg., CHICAGO
77 Oliver St., BOSTON. Prudential Bldg., ATLANTA, GA.

STOVE LININGS McLEOD & HENRY CO., TROY, N. Y.

Gray Iron Castings. S. CHENEY & SON, Manlius, N. Y.

One of the most vital points about a steam or hot water boiler is the manner in which the sections are connected. After a great deal of experimental work we have patented a corrugated malleable nipple. It makes a perfectly watertight joint and is far superior to either a push nipple or a screw joint. Additions or repairs can easily be made to the boiler and the joints cannot possibly rust fast. This is one of the many good points about the Paragon Boiler.

ISAAC A. SHEPPARD & CO.

NEW YORK PHILADELPHIA BALTIMORE

Common opinion is
hat common galvanized
on is good enough; but
ommon opinion is poor
pinion—on everything.

American Sheet Steel Company
Battery Park Building
New York

OUR Price List is now in the hands of the printer. Drop us a line, and we will mail you a booklet illustrating the lar est and most complete line of stoves and ranges ever manufactured.

"STEWART" Means Perfection.

Write Early and Avoid the Rush.

FULLER & WARREN CO., Troy, N Y.

FOLLANSBEE BROTHERS CO.,
328-330-332 Second Ave.,
Apollo B. B. Galvanized Sheets.

Sheet Copper shipments made promptly from mill, or Pittsburgh stock at the lowest market prices.

Philadelphia Branch,
133 Arch Street,
S. V. Reeves, Manager.

THE DIGHTON FURNACE Page 20.

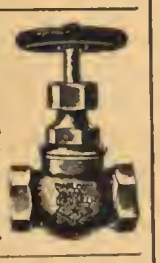
CROSBY SPRING-SEAT

GLOBE and ANGLE VALVES, IRON and BRASS.

All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.

Crosby Steam Gage & Valve Co.,

BOSTON: 95 Oliver St. NEW YORK: 78 John St. CHICAGO: 21 23 W. Lake St.



Steam Specialties.

RELIEF and ELEVATOR VALVES, STEAM TRAPS, STEAM AND WATER REDUCING VALVES, TANK TEMPERATURE CONTROLLER and A No. 1 DAMPER REGULATORS.

NOISELESS BACK PRESSURE VALVES. PUMP GOVERNORS. STEAM and OIL SEPARATORS.

KIELEY AND MUELLER.
317 W. 13th St., - NEW YORK.

Jenkins Bros.' Valves

are manufactured of the best steam metal, and are fully guaranteed. Why experiment with cheap valves? If you want the *BEST* ask your dealer for valves manufactured by Jenkins Brothers. Remember all genuine are stamped with Trade Mark like cut.

JENKINS BROTHERS, New York, Philadelphia, Chicago, Boston.

ROUND OAK— STANDARD of AMERICA

CURTIS GANDY CHI. 1900

You probably have had some experiences with explosions in furnaces

occasioned by putting in too much fuel when fire was low.

A furnace made to resist the worst that could happen along that line and stay gas tight would not be too good, would it?

Well, that is the way the Round Oak is built.

Estate of
P. D. Beckwith, Dowagiac, Mich.

MAKERS OF GOOD GOODS ONLY.

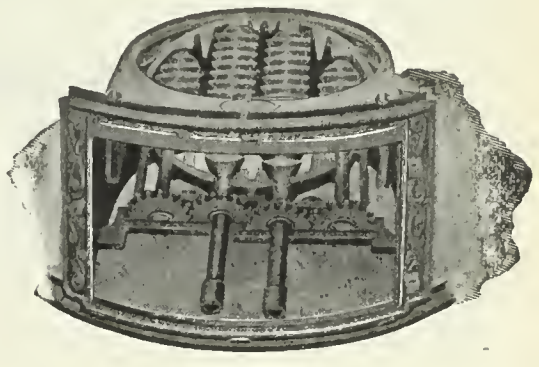
31

HB CHICAGO

It is far easier to effect a single sale than to gain a permanent customer. Glue them to you—make them stick—sell good goods—CARTON FURNACES, for instance.

CARTON "F"

WARM AIR FURNACE



There are many "talking points" about this heater.

One thing may be emphasized strongly:

No furnace in the market presents more efficient fire surface.

Look at the gas dome—a one-piece casting—no chance for an argument here.

MODERATE IN PRICE.

THOROUGHLY EFFICIENT.

International Heater Co.,

UTICA, N. Y.

BOSTON, NEW YORK, CHICAGO, DENVER.

The Largest Makers of Heaters in the World.

GARLAND STOVES AND RANGES
"The World's Best"

Nothing to
"Garland"
For the Sea

New Models of Steel Ranges.

New Models of Steel Cooking Stoves.

New Models of Base Burners.

New Models of Sheet Iron Hea

New Models of Sheet

More New and Desirable Patterns

Our New Catalogue now in the hands

First Prize Paris 1900.

The Michigan S

Largest Makers of Stove

DETROIT. CHI

o Good for

Agencies!

GARLAND STOVES AND RANGES
"The World's Best"

son of 1901.

New Models of Cast Ranges.

New Models of Cast Cooking Stoves.

New Models of Oak Stoves.

ers for Coal (Hot Blasts).

on Heaters for Wood (Air Tights).

han have ever before been offered.

f the printers and will soon be issued.

ove Company,

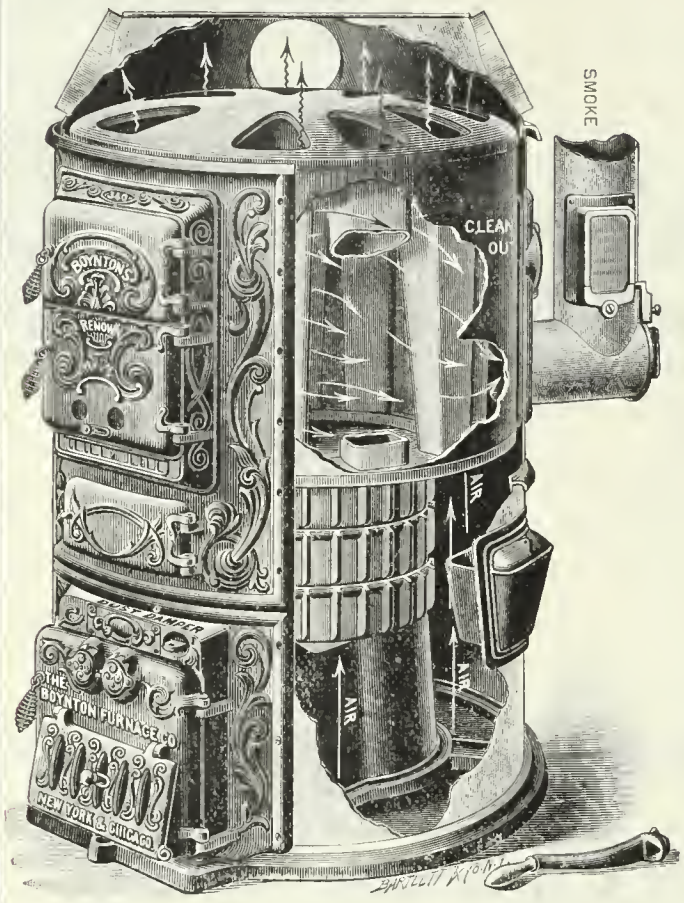
nd Ranges in the World,

GO. BUFFALO.

First Prize Paris 1900.

BOYNTON'S "RENOWN"

PORTABLE FURNACE



A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**

NEW YORK, CHICAGO.

1902 "RELIABLE" STEEL RANGES

Are Perfect in Every Detail.

We have added many valuable improvements for the coming season.

Place no orders until you see our line.

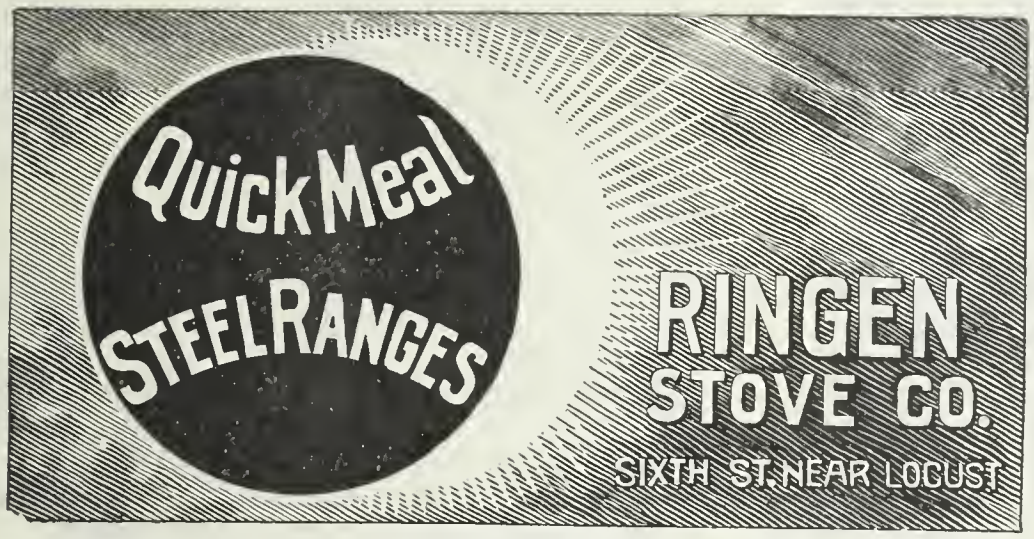
Write for Catalogue.

Made by

THE SCHNEIDER & TRENKAMP CO.,

Cleveland. Chicago.

QUICK MEAL



THEY LOOK WELL.

THEY BAKE WELL.

THEY SELL WELL.

RINGEN STOVE Co. SAINT LOUIS

MONARCH CINDERELLA

FOR HARD COAL.

In the Monarch Cinderella will be found one of the most perfect high grade, medium priced, base burning double heaters offered to the trade.

Every modern and desirable improvement is embodied in its construction. We believe the careful buyer will acknowledge that there is not a better stove in its class.

Every point has been studied to make it the best; and for ingenious, effective simplicity in construction it stands without a peer.

Best Workmanship, Best Materials, Silver Nickel.

We would be pleased to send our catalogues.

Pittsburgh Stove & Range Company,

PITTSBURGH, PA.

WESTERN SALES AGENT, W. D Sager, 38 and 40 Michigan St., Chicago, Ill.

The Monitor Base Burner.

High Art Series.

It is without doubt the most powerful heater made and its rich and graceful appearance will attract attention at once The novel construction and distinctive features offer every advantage to the dealer who secures the agency. The diving flue is in front, extending entire width of stove, being what is commonly known as a sheet flue, thus the greatest heat is in the front of the stove where it is most needed. The draft is taken in through the bottom, carrying the heavy foul air which settles near the floor. Grate is of the duplex pattern with outer shaking ring. Two large circulating flues are fitted in rear corners of the stove, affording ample circulation for heating evenly the largest room. Our new catalogue will be out of press on the 17th. Secure the agency at once.

The Wm. Resor & Co.,

CINCINNATI, U. S. A.

SUNSHINE OAK.

A FULL LINE.

Sizes—14 inch to 22 inch.

High Class and First in its Class.

Just the Thing for School House Heating.

Our descriptive circular and price-list will interest you.

MADE AT THE

SUNSHINE STOVE SHOP.

THE READING STOVE WORKS,

ORR, PAINTER & CO.,

Main Office and Foundries:
READING, PA.

Western Foundry: DAYTON, OHIO.

BRANCHES:
153-159 S. Jefferson Street, CHICAGO.
86-90 Canal Street BOSTON.
64-66 N. 2d Street, PHILADELPHIA.
411 William Street, BUFFALO.

Moore's Ranges

Another Nice Thing

about the Hinged Key plate on Moore's Ranges, is shown here.

Besides allowing the woman to roast or broil meats, or make toast, *BY SIMPLY RAISING THE KEY PLATE.* (See that chain,)

SHE MAY FEED THE FIRE

without having to *SHOVEL IN* the coal,—a much handier plan than the old way.

These Ranges are full of advanced ideas, in Range building—original with the makers; and contain so many good "talking points," that they are known among the dealers who handle them as

"The Easy Line to Sell."

We solicit correspondence.

JOLIET STOVE WORKS,

JOLIET, ILLINOIS.

STOVE DEALERS' GUIDE...

IN ORDERING OAK STOVES AND HEATERS AS MADE BY

The March-Brownback Stove Co.

POTTSTOWN, PA.

CROWN OAK DOUBLE HEATER

CROWN OAK STOVE

PRIZE OAK HEATER—Style A

PRIZE OAK STOVE—Style A

PRIZE OAK HEATER—Style B

PRIZE OAK STOVE—Style B

PRIZE OAK STOVE—Style C

PRIZE OAK HEATER

PRIZE OAK STOVE

PURITAN OAK STOVE AND HEATER

PRIZE OAK STOVE AND HEATER

GIANT OAK STOVES

Making a Grand Total of Seventeen Distinct Sizes of Oak Heaters and Thirty-four Distinct Sizes of Stoves

We can furnish these Oaks, full nickeled, at net prices varying, for 10 inch Fire Pot, from $5 00 to $10.00—12 inch Fire Pot, $6.00 to $15.00—14 inch Fire Pot, $7.00 to $18 00—16 inch Fire Pot, $9.00 to $21.00 and 18 inch Fire Pot, $11.00 to $25.00. Write us for circulars showing these Oaks in greater detail.

VICTOR ANDES.

A 4 HOLE RANGE.

18 x 18 and 20 x 20 inch Oven. 8 and 9 inch Tops.

A First-Class High Grade Range.

CHASTE DESIGN.

THE GRATE IS REMOVABLE. FIRE BOX IS PERFECT.
ASH PAN IS LARGE. SWING HEARTH.
LARGE BROILER. DOOR OPENING FLUSH.
THERMOMETER IN OVEN DOOR IF DESIRED.

This Range is fully up to the national reputation of the

Andes Stoves and Ranges,

which are among the few American Stoves and Ranges which command the enthusiastic approval of both dealers and users.

WRITE FOR CATALOGUE.

Phillips & Clark Stove Co.,

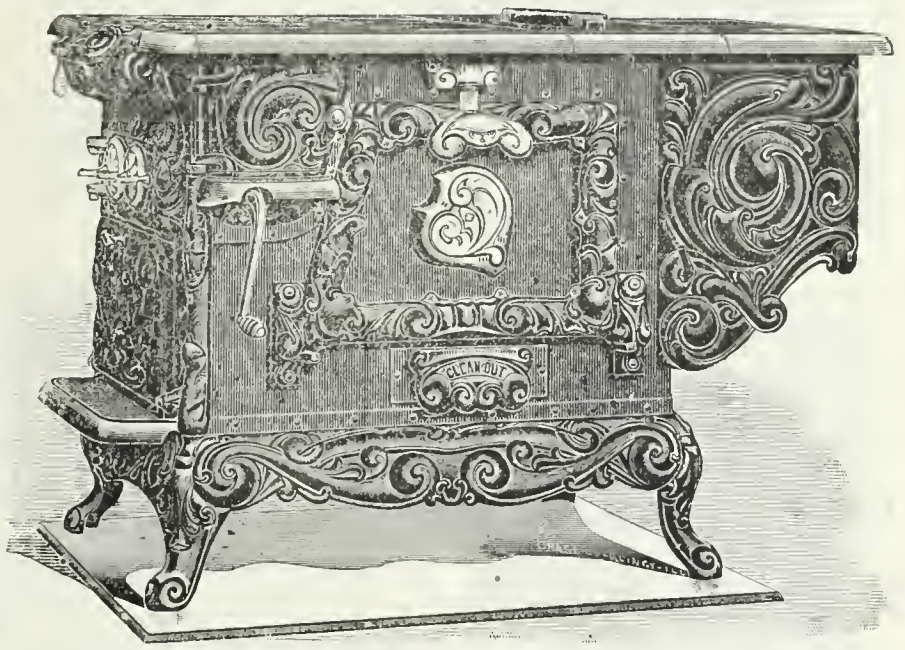
GENEVA, N. Y.

COOK & VAN EVERA CO., 38-40 Lake Street, Chicago.

Prize Monogram Steel Range for Soft or Hard Coal or Wood. In two Sizes, 18 x 20 Ovens, 20 x 20 Ovens.

To The Trade

A Few of Our Monograms.



Prize Monogram Steel Cook in 3 Sizes, 16, 18 and 20. Square Ovens.

23 in.
25 in.
29 in.

The Body Made of 16 Gauge Steel.

Do not Place Your Fall Orders until you have seen our New Lines of Monogram Heaters and Cooks.

Write for Catalogues and Prices, They are Sellers.

THE QUINCY STOVE MFG. CO.,

QUINCY, ILL.

Model Radiator

For Hard or Soft Coal.

Made in four sizes, Nos. 12, 14, 16 and 18.
Every stove a single or double heater complete, without the use of extra parts.
Large heating surface—Equal to that of an Oak.
Best and simplest reversible pipe collar.
Very substantial outer casing, which is easily removed.
Joints ground and cemented.
All doors fitted Air-Tight.
Our patented Air-Tight draft register in Ash Pit Door.
In this stove we use our new patented method of holding the sheets of mica. They will not get out of place or smoke up.
Handsome Nickel Ornamentation.
A postal card will bring you more information.

MODEL RADIATOR.

THE PORTSMOUTH STOVE & RANGE CO.,

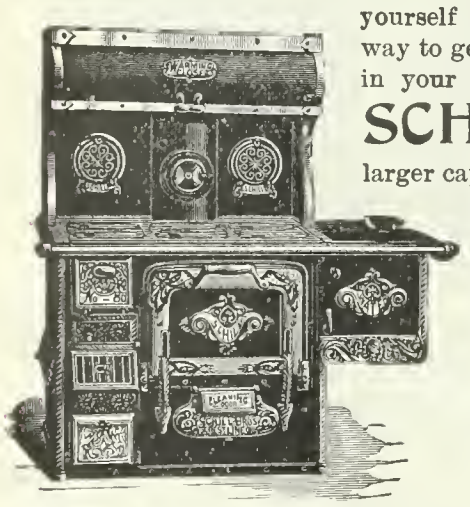
THE BUSIEST MAKERS OF STOVES & RANGES IN THE WORLD

Portsmouth, O.

MORLEY BROS.,
Saginaw, Mich.,
Agents for Michigan and the Northwest

DON'T

handicap yourself in the stern competitive struggle after business by handling an inferior range or furnace. You can't afford to pursue such a course or you will find yourself in the rear division of the procession. The way to get to the front in the furnace and range trade in your town is to handle recognized leaders like

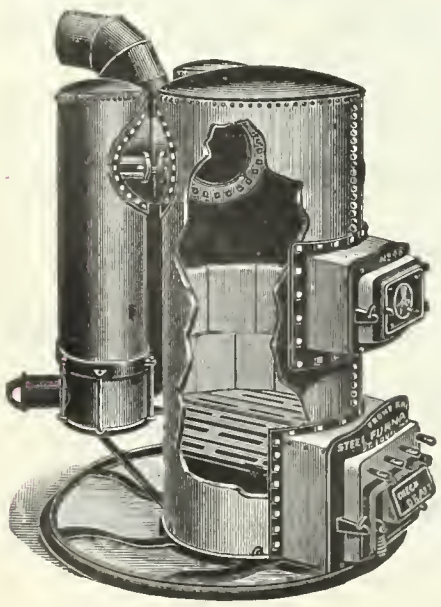


SCHILL FURNACES and **RANGES.** The company making these ranges has a larger capitalization and greater facilities than ever before, and these goods are to be even more widely known in the future than they have been in the past.

Write us for catalogue and discounts.

THE SCHILL BROS. CO.,

CRESTLINE, O.



Front Rank Hot Air Furnaces

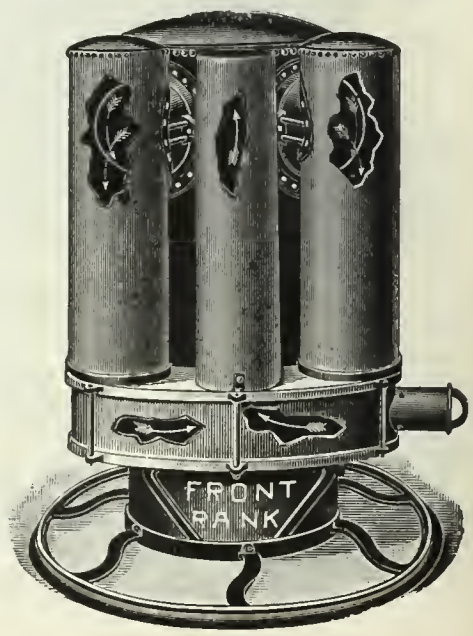
are built on vertical lines; air comes in direct contact with entire heating surface.

The Front Rank Fire Chamber is one solid sheet of closely riveted steel; being lined above the fire lines with genuine fire clay tiling it is the most durable made.

The radiators are very large and have an unusual area of heating surface in comparison with the size of fire pot.

These furnaces burn hard or soft coal or coke. We also make wood burning furnaces.

Send for our catalogue, it will give you a better idea of what we make.



FRONT RANK STEEL FURNACE CO.,

2301 to 2309 Lucas Ave., St. Louis, Mo.

CATALOGUES SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

COLUMBIAN OAK.

Double Heater and Self Feeder.

The handsomest OAK made, highly ornamental and perfect in every particular.

Anti-Friction Center Draw Grate,

Easily and conveniently applied, through feed door, without removing any bolts.

DUST TIGHT and GAS TIGHT.

Equipped with the best and economical hot blast for perfecting combustion.

No. 23. 13 INCH FIRE POT.
No. 25. 15 INCH FIRE POT.

THE COLUMBIAN LINE

of heating Stoves, Ranges and Furnaces are famous quick and profitable sellers.

Send for Circulars and Price List.

THE KEELEY STOVE CO.,
COLUMBIA, PA. 21 South Charles St., Baltimore, Md.

Emperor Furnaces
FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing.

SEND FOR CATALOGUE.

Bergstrom Bros Co.

NEENAH, WIS.

JEWEL STOVES AND RANGES..

JEWEL STOVES AND RANGES
DETROIT STOVE WORKS
LARGEST STOVE PLANT IN THE WORLD

A Complete, Well Advertised Line; Low Prices and Good Workmanship.

Please Write for Catalogue.

DETROIT STOVE WORKS.

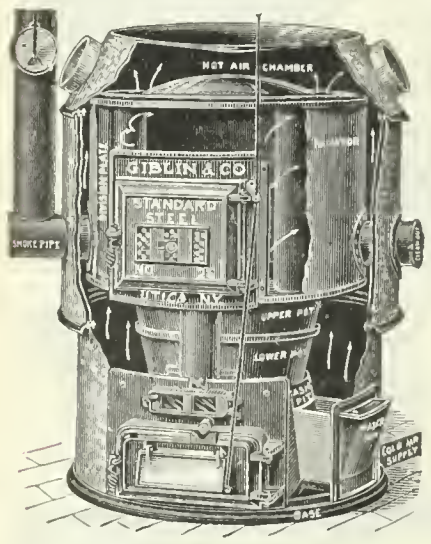
Detroit - Chicago.

AIR TIGHT HEATERS.

Our line in these comprises everything from the cheapest to the very finest finish possible to produce. Our manufacturing facilities and daily output justify us naming prices below any possible competition. This fact has enabled us to establish Wholesale Agencies in nearly every large city in the United States and makes it possible for us to supply the Dealer "Near His Door," saving time and freight. We also manufacture **Steel Ranges, Steel Cooks, Cast Ranges and Cooks, Hot Blast Coal Heaters, Oaks, Laundry Stoves, Radiators, etc**, all up-to-date goods.

Write us for particulars and we will put you in the way of making some money.

EXCELSIOR STOVE & MFG. CO., - Quincy, Ills.



Mr. Furnace Dealer:

Let us get together personally or by mail and talk the matter over.

You sell furnaces, and in your territory have a lot of people who MIGHT buy furnaces if you could convince them how much they would be benefited by doing so.

Let us tell you how to do this. We can tell you by letter or can have some of our many travelling salesmen call on you personally and tell you. We can show you how you can sell the Standard line of furnaces, please your customers and make a profit. You have sold furnaces and made no profit and failed to please your customers. You sold the WRONG furnace. Now let us show you we have the RIGHT one and things will change. Distance is no obstacle. We will attend to you anywhere in U. S. Write us and let us talk to you. Our catalog is free for asking.

GIBLIN & CO. - - UTICA, N. Y.

DAY and NIGHT

THE RICHMOND

Steam and Hot Water

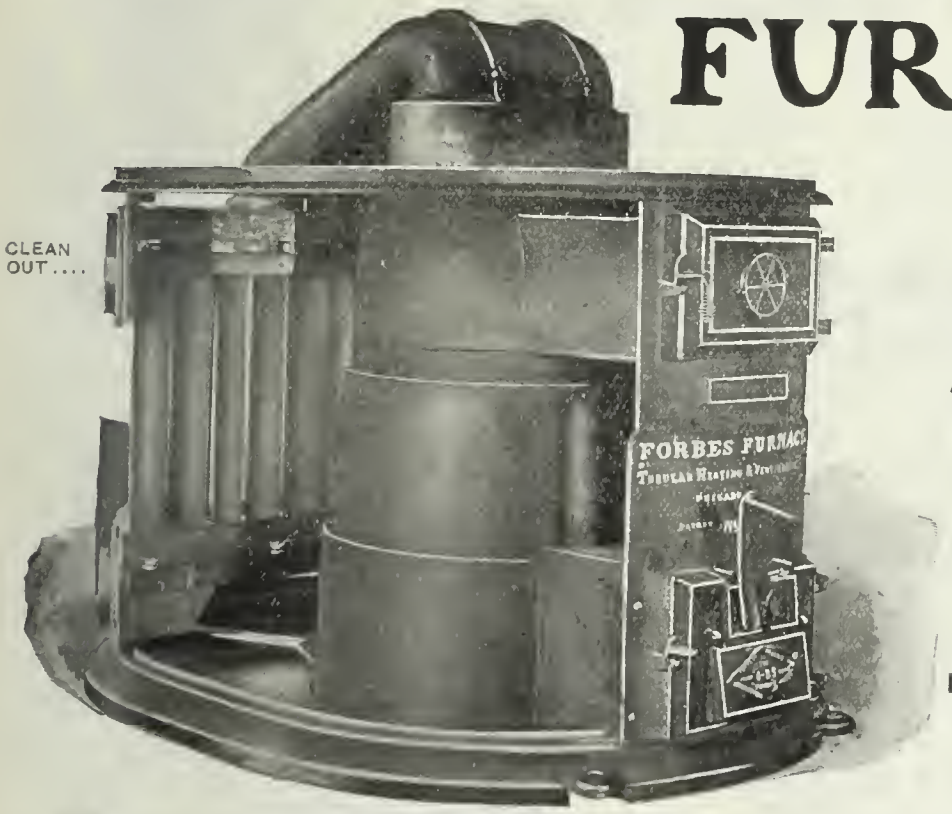
BOILERS

keep up their good work, giving more heat with less coal than any other heater made.
Powerful, economical, durable. Quick to set up, quick to clean.

A Catalogue sent for the asking.

THE RICHMOND STOVE CO., - Norwich, Conn.

FORBES (IMPROVED) WARM AIR FURNACE.



ONLY 4 FEET 3 INCHES HIGH.

Compact and Simple Construction.

Aluminum Tubes

IN RADIATOR
ARE RUST PROOF.

Triplex Grate.

PERFECT SHAKING. PERFECT DUMPING.

Each Bar can be separately replaced.

Forbes Furnaces

Save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE AND PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

232 Quarry St., PHILADELPHIA, PA.

Royal Heaters.

MANUFACTURED BY THE

HART & CROUSE Co.

UTICA, N.Y.

ALL THE LEADING LINES OF

STEAM, HOT WATER & HOT AIR,

FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST., N.Y.
COLUMBUS, O.

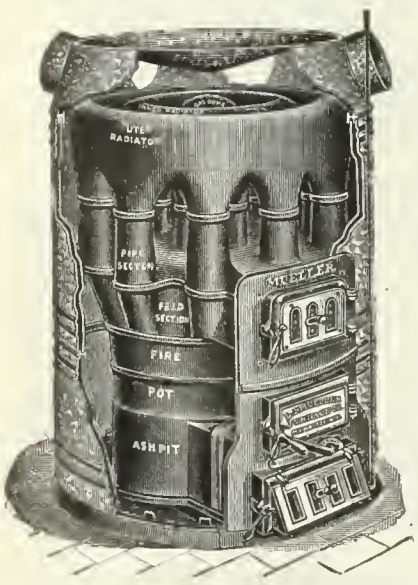
BRANCHES.

79 LAKE ST., CHICAGO.
ST. LOUIS.

WINCHESTER

How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.

HEATER.



"MUELLER"

FURNACES and BOILERS

MEAN

Comfort and Economy.

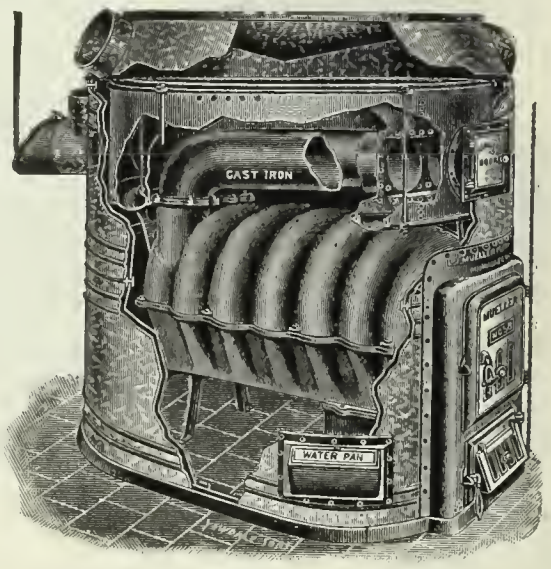
Why not take the Agency of the

BEST and LARGEST LINE?

Write for our 1901 Catalogue and Prices.

GET OUR SPECIAL OFFER ON REGISTERS.

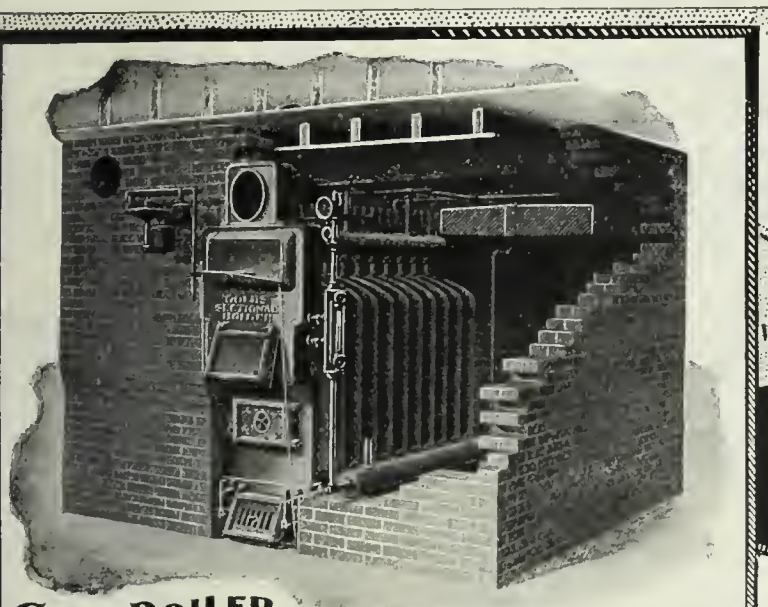
Established 1857.



L. J. MUELLER FURNACE CO., 190 Reed Street, MILWAUKEE, WIS.

THE H.B. SMITH CO.

WESTFIELD, MASS.

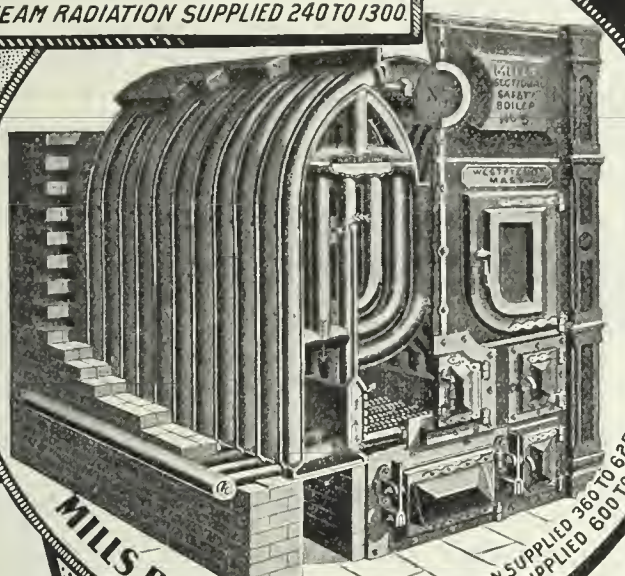


GOLD BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

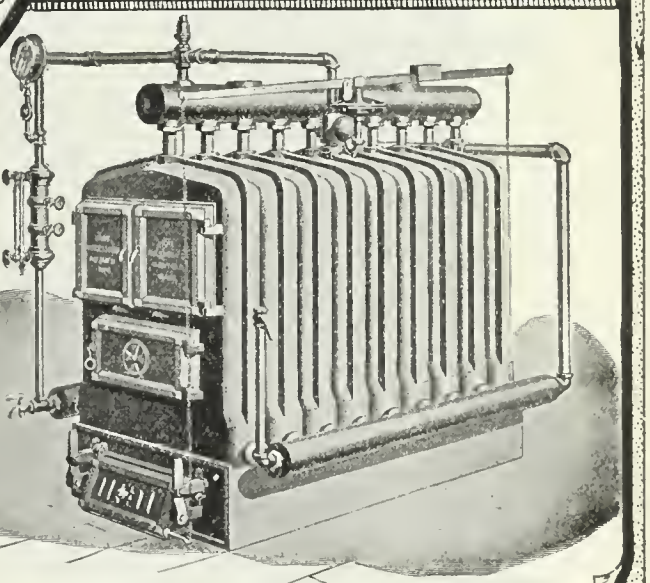
EUROPEAN AGENT,
AUG. EGGERS
BREMEN AND NEW YORK CITY.

COTTAGE BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 100 TO 550.

PACIFIC COAST AGENTS,
DUGAN BRO'S.
SAN FRANCISCO CAL.

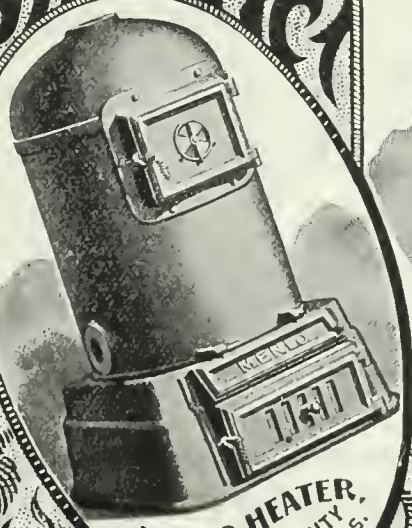


MILLS BOILER, SQ. FEET STEAM RADIATION SUPPLIED 360 TO 6250.
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.

COTTAGE BOILER,
SQ. FEET WATER RADIATION SUPPLIED 150 TO 1000.



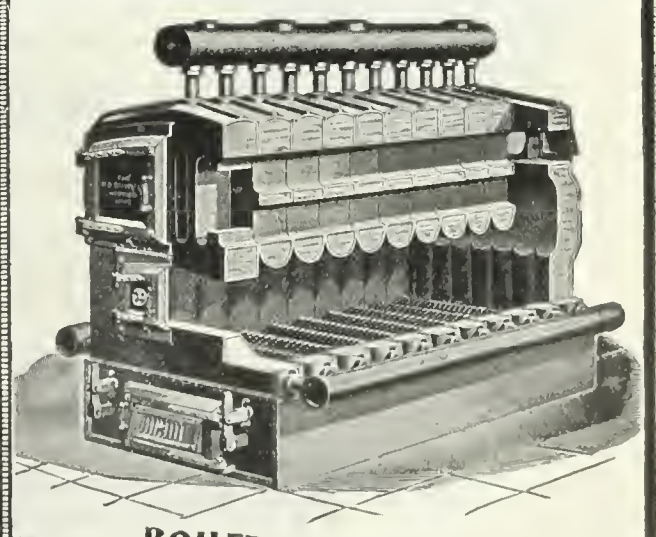
MENLO HEATER,
TANK CAPACITY
100 TO 180 GALLONS.

Western Agents

WESTERN BRASS M'F'G CO.

ST. LOUIS, MO.

SALESROOMS:
133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.



MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.

Have you ever kept any record of the time spent figuring jobs you didn't get?

Does the man who gives his heating contract to your competitor show any feeling that your time given to figuring was of any account?

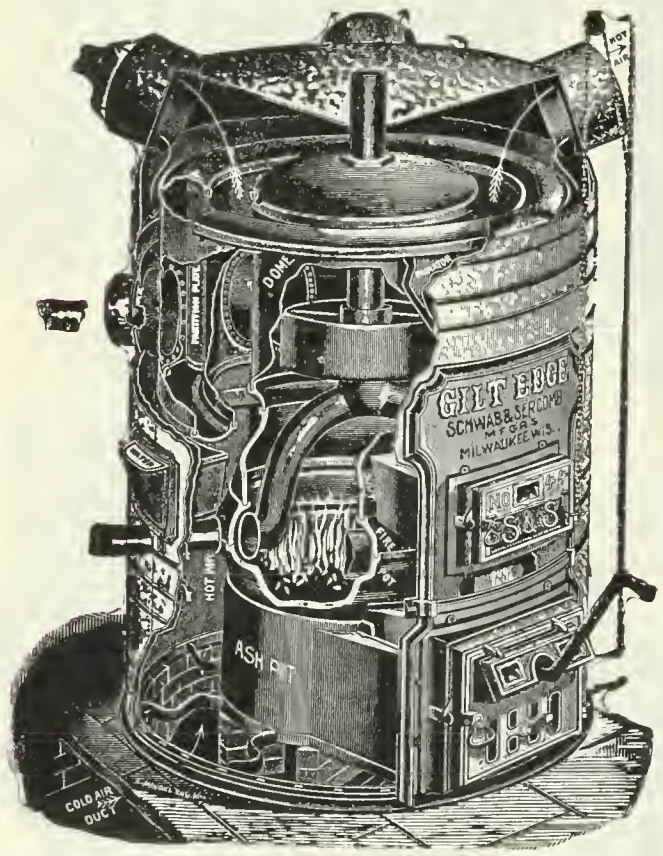
If you honestly believe a "DIGHTON" Furnace will last as long without repairs, heat a given number of cubic feet of space evenly, and do it with less fuel than any other Furnace having the same size fire pot, can't you sell it at a good profit if it don't cost you near as much as others you are now buying?

Every single dealer who has set a number of "DIGHTONS" will speak just as strongly of its merits as we do.

A fair test where there is an opportunity to compare results secured will make you a "DIGHTON" customer.

Many Furnaces that will not do one-half the work that a "DIGHTON" will do, cost you twice the amount we charge you for the "DIGHTON."

DIGHTON FURNACE CO., Taunton, Mass.



UTILIZED radiating surface, that is economy Sectional fire pots from 1 in. to 2 in. thick and other parts in proportion, that is durability. Positive gas-tight joints, that is necessary to health. These, with all other improvements for ease of management, are combined in the Gilt Edge Furnaces. They are made for all kinds of fuel, and are the very best.

Write for Catalogue and Prices to

R. J. SCHWAB & SONS CO.,

Mfrs.

MILWAUKEE, WIS.

E. E. DUNNING, Mgr. Furnace Dept.

KEEP UP WITH THE PROCESSION.

CONTRACTORS USING OUR BOILERS

Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

If this interests you drop us a line and receive our NEW Catalogues and Prices.

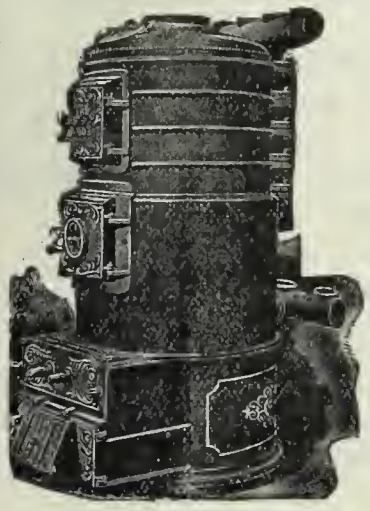
KEWANEE BOILER COMPANY

Home Office and Factory,

Chicago Store, 169 Lake St.

KEWANEE, ILLINOIS.

HONEST SERVICE ALWAYS.



George Washington's stamp on a barrel of apples always enhanced the value of the apples. For the buyer realized that if he branded it, the goods must be first quality and full measure.

"GURNEY" HEATERS,

BRIGHT IDEA, 400 SERIES and DORIC,

enjoy similar confidence. For the name of Gurney is a stamp of integrity. Durability and honest service have always been our aim. We admit our claims have been positive; but "Gurney" Heaters have fulfilled them all; so that *each heater placed is the strongest kind of recommendation for other business.*

There's just as pleasing a difference between selling "Gurney's" and selling other heaters as there is between doing any two other things, one of which is easy and the other hard. Wouldn't you prefer the easy way? Then become a "Gurney" Agent. We shall be glad to hear from you at any time. Latest trade catalogue on request.

Gurney Heater Mfg. Co., 74 FRANKLIN ST., BOSTON.
111 FIFTH AVE., NEW YORK CITY.

Western Selling Agents, JAS. B. CLOW & SONS, - - - 222 to 224 Lake St., CHICAGO, ILL.

BENGAL FURNACES

HAVE MORE RADIATING SURFACE
THAN ANY FURNACE THEIR SIZE.
THEREFORE MORE HEAT FOR A GIVEN AMOUNT OF FUEL.

THAT MEANS A SAVING IN DOLLARS.

You can make no mistake in taking on THE BENGAL LINE, THEY ARE TRADE WINNERS.

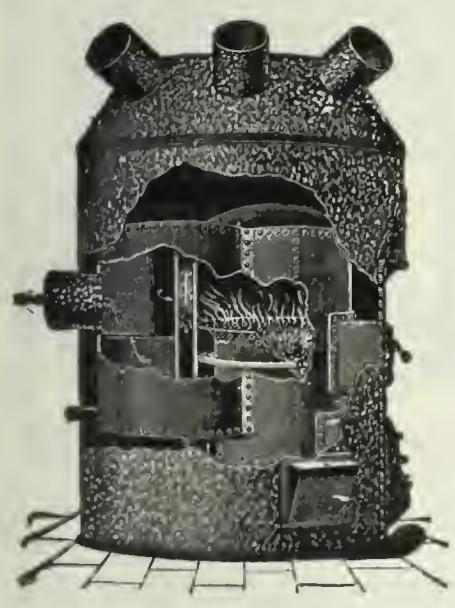
Secure a BENGAL AGENCY at once.

CATALOGUE AND FULL INFORMATION ON REQUEST.

FLOYD, WELLS & CO.
ROYERSFORD, PA.

Eastern Selling Agents,
GURNEY & CO.,
Washington, Hanover & Elm Sts.,
Boston, Mass.

WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

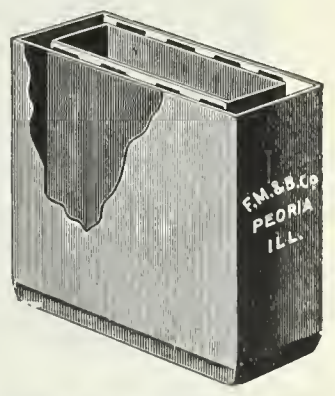


THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,
1300-1304 S. Washington St.,
SEND FOR CATALOGUE. PEORIA, ILLS.



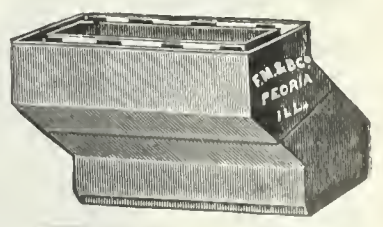
"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,
SEND FOR CATALOGUE. PEORIA, ILLS.



BRAND STOVE CO.

STOVES, RANGES and FURNACES.
SEND FOR CATALOG.
MILWAUKEE. WIS.

HOT WATER AND HOT AIR

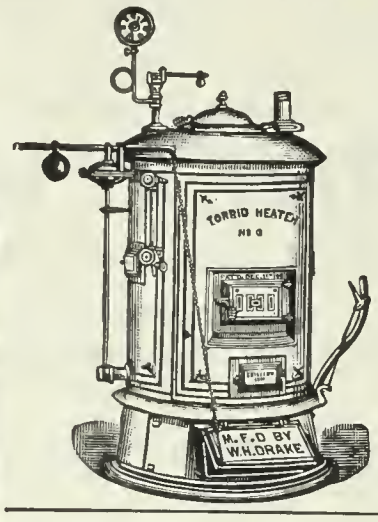
HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

"TORRID HEATER."
FOR STEAM OR HOT WATER



It is Practical in Design.
It is Safe, Being Tested to 200 Pounds.
It is Easy to Manage and Keep Clean.
It is Durable.
It is Sectional and Easily Handled.
It has No Packed Joints.
It is Self-Feed or Surface Burning.
It has the Torrid Patent Rocking and Dumping Grate.
It is Low in Price.

SEND FOR CATALOGUE.

MANUFACTURED BY
W. H. DRAKE, No. 36 Clinton St., NEWARK, N. J.
Factory: Hackettstown, N. J.

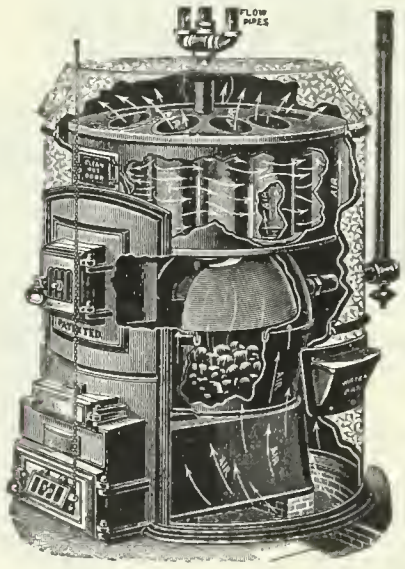
KINEO FURNACES
FOR WOOD.

The Kineo Furnaces are built to secure durability and heating qualities. The smoke enters the radiators on the back and passes entirely around the radiator before entering the chimney, making them the most powerful heaters known. Also manufactured in two sizes with steel radiators.

SEND FOR CIRCULARS.

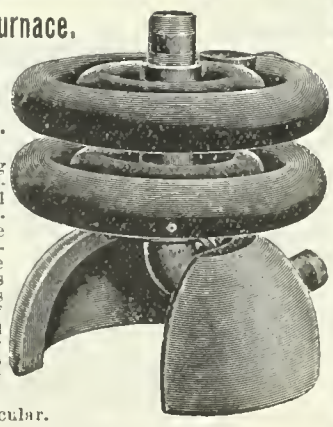
Noyes & Nutter Mfg. Co.,
BANGOR, MAINE.

The Champion Hot Water Combination Boilers.



They Fit Any Furnace.

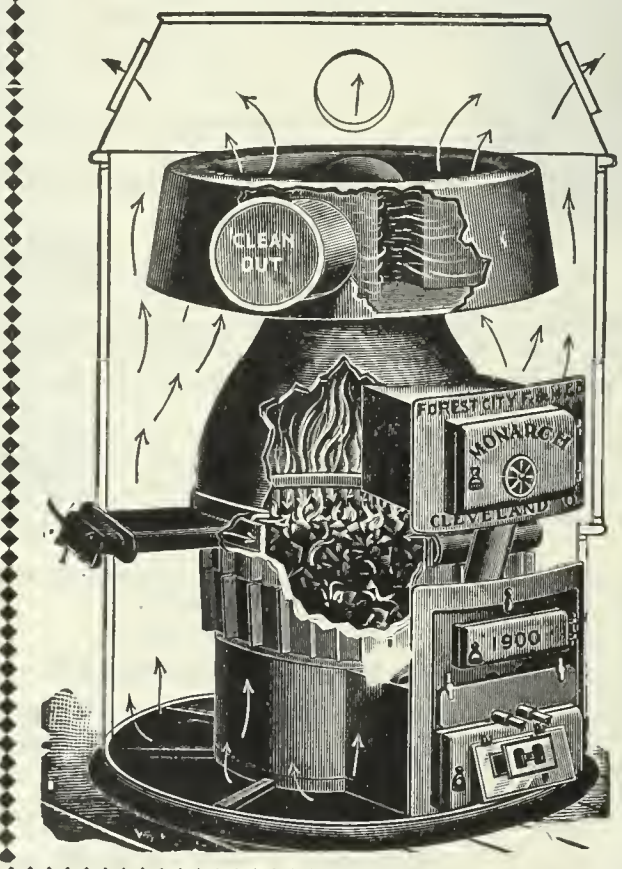
Base Section with Rings Attached.



One or more ring sections can be added for additional capacity to be determined by the amount of hot water radiation to be used. These boilers are made in sizes to fit any style of hot air furnace and have a **capacity of from 100 to 600 square feet radiation.**

Write for new circular.

MANUFACTURED BY
FRANK D. STOLZ, 115 Lake St., Chicago, Ill.



MONARCH FURNACES.

All Cast Iron. For Hard and Soft Coal. At Foundry Prices to Large Buyers.

Inquiries Solicited.

OUR NEW CATALOGUE JUST OUT.

The Forest City Foundry and Mfg. Co.
81 Elm Street,
CLEVELAND, OHIO.

Gray Iron Castings to order. High grade only.

Vance Boilers.

The most economical Steam and hot Water Boiler on the market. Write for Catalogue and Price List.

VANCE BOILER WORKS,
373 Atkinson St., Geneva, N. Y.

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES

HOT-AIR AND COMBINATION AIR AND

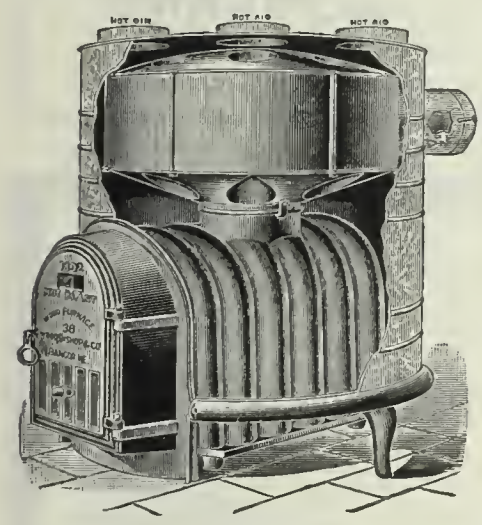
WATER FURNACES

LAUNDRY STOVES CONFECTIONERS' STOVES

CABOOSE RANGES ETC ETC

STAMFORD CONN

WOOD FURNACES.



THE HOT BLAST.

Established 1839. Incorporated 1894.

OUR IMPROVED MONITOR.

The most powerful heater made.

2 SIZES, PORTABLE OR BRICK SET.

No. 38 for 3 ft. wood. No. 50 for 4 ft. wood.

OUR LOW PRICED HOT BLAST.

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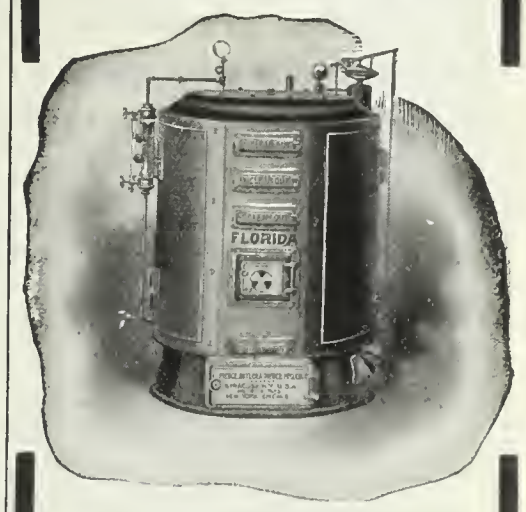

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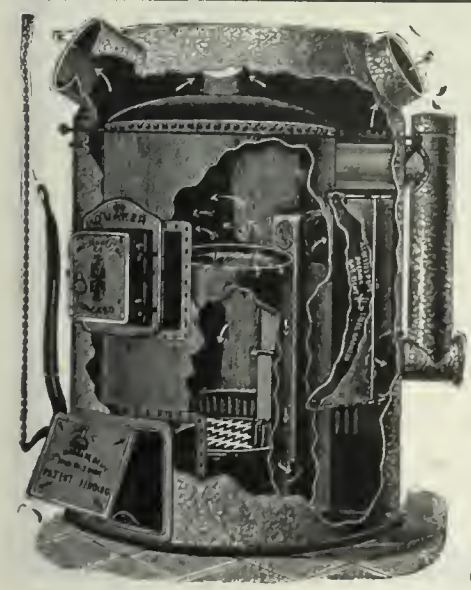

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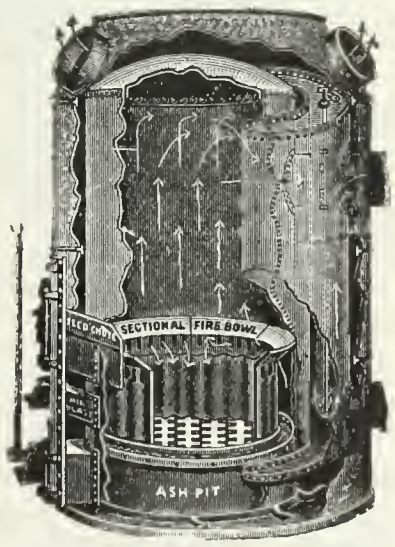

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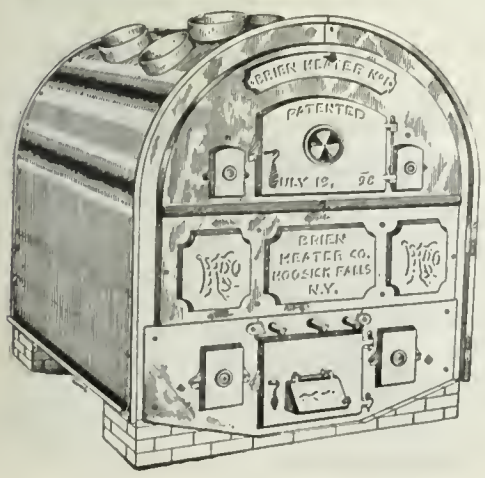

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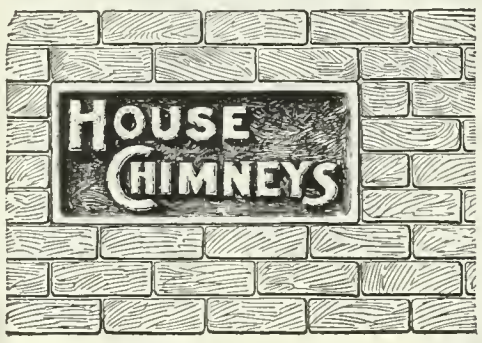

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CONDENSATION IN STOVE PIPES 46, 47

SMOKE PIPE FOR WOOD FURNACES 48

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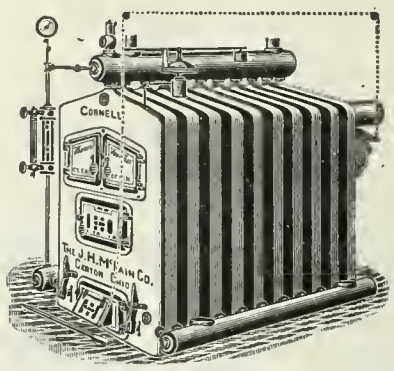

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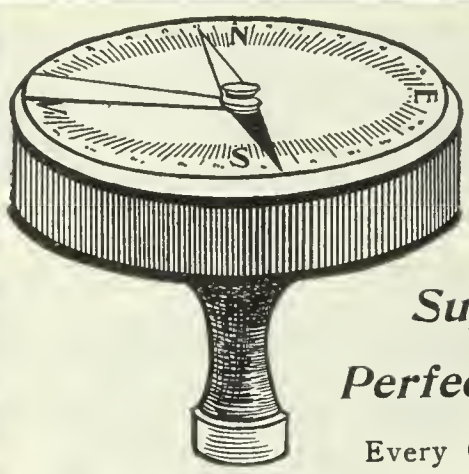

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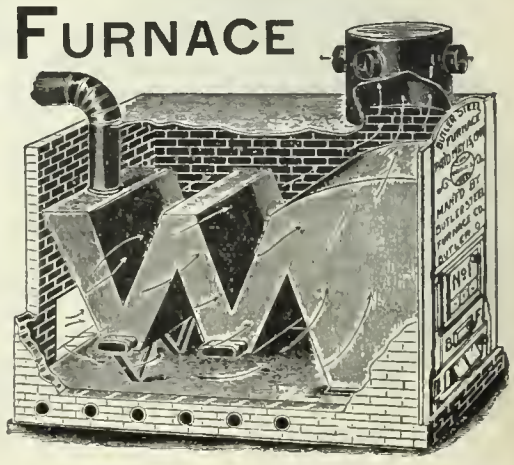

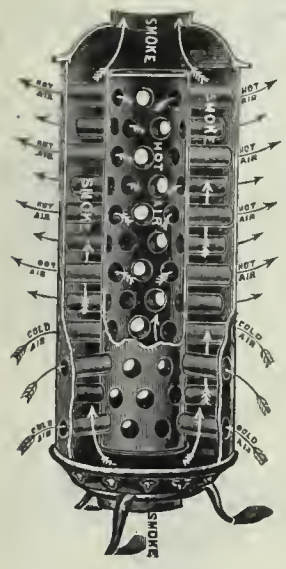

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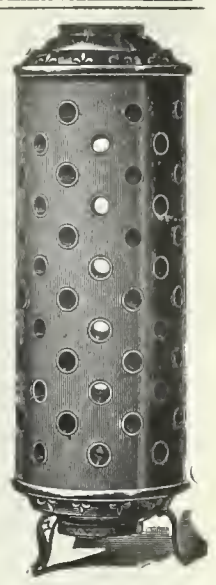

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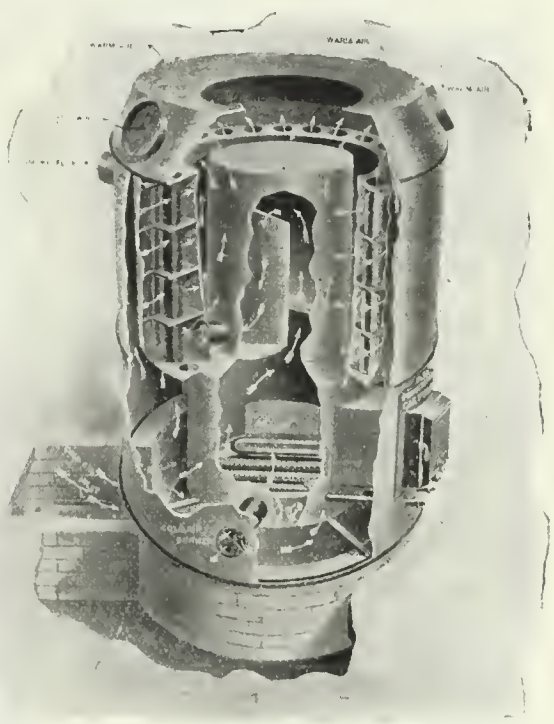

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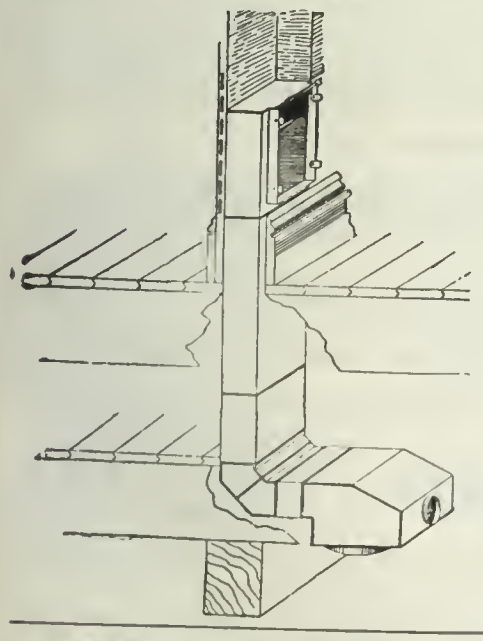

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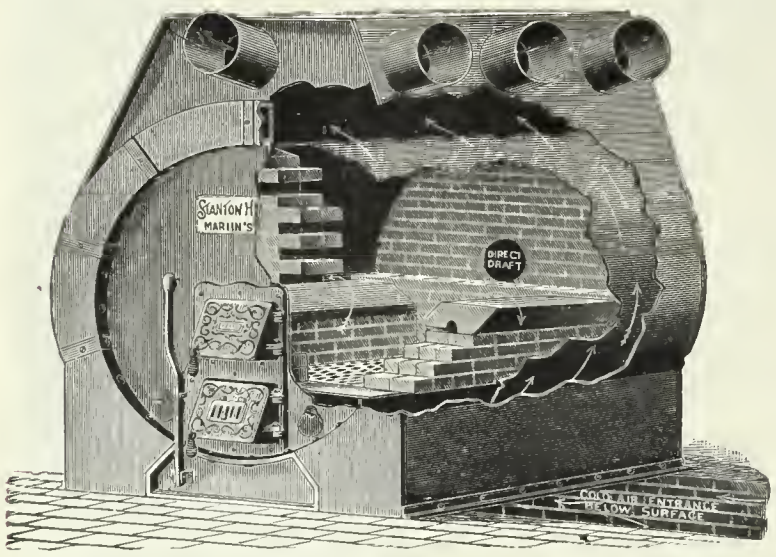

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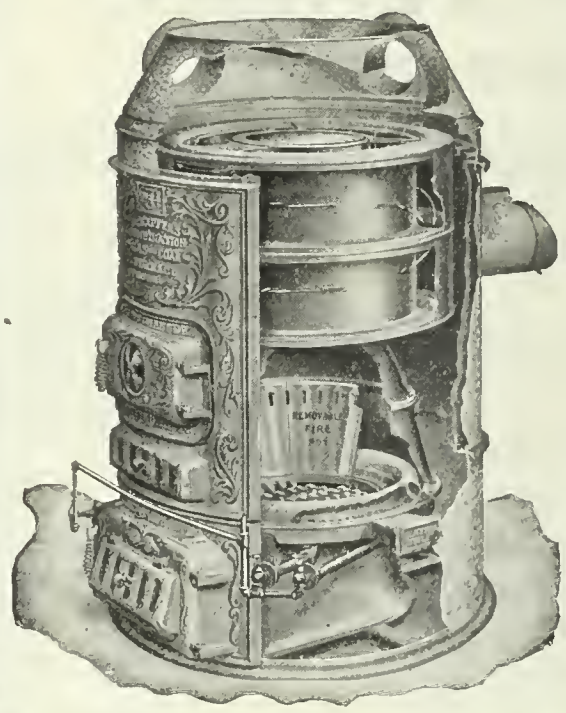

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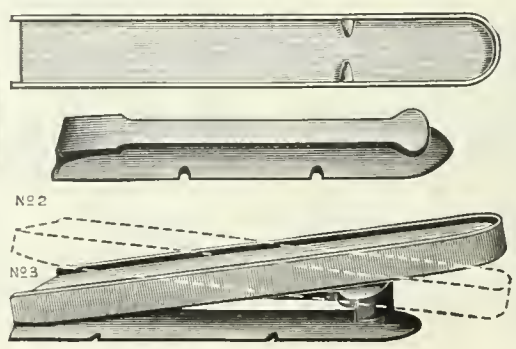

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Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

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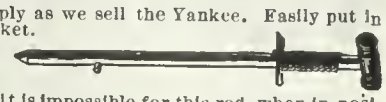

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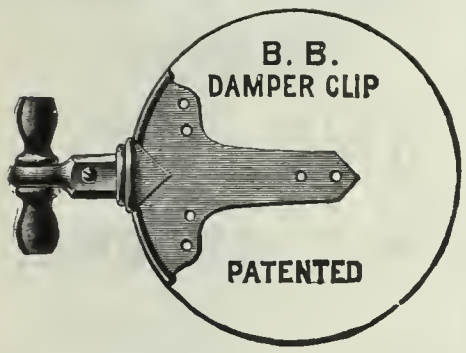

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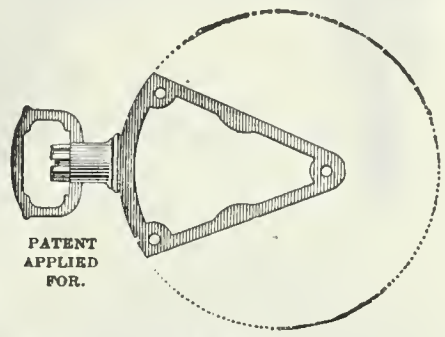

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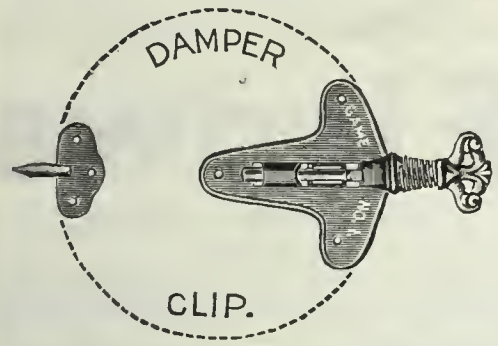

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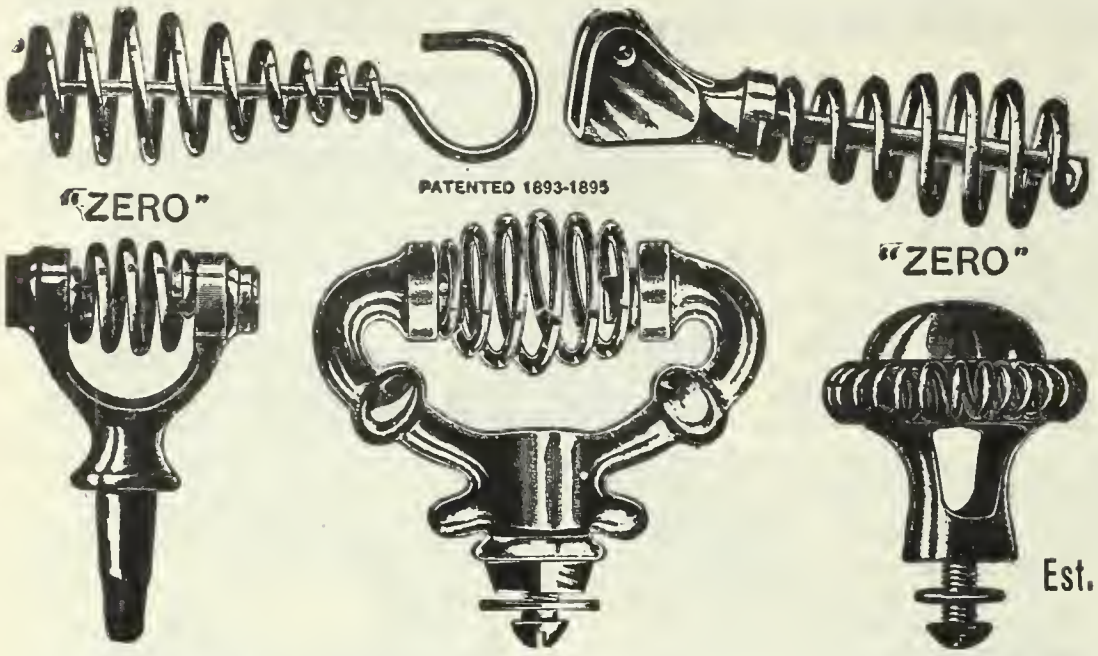

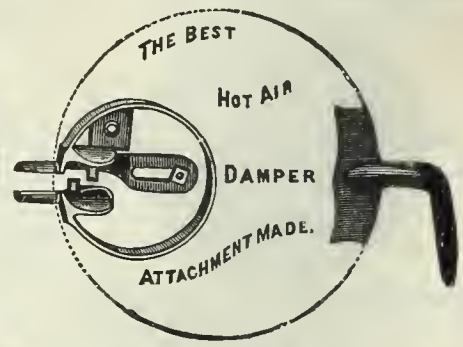

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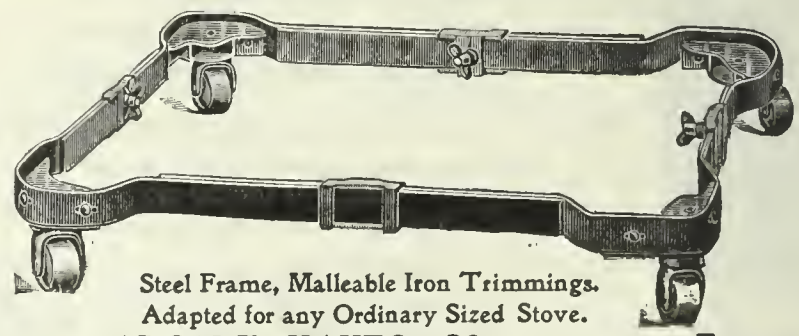

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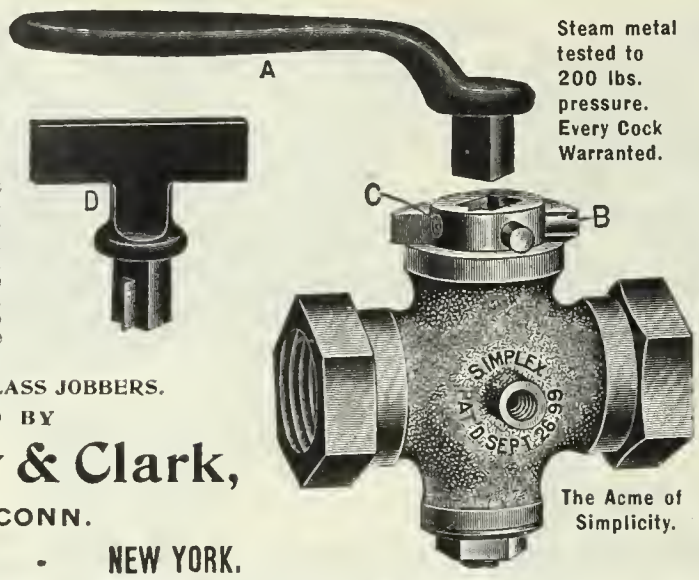

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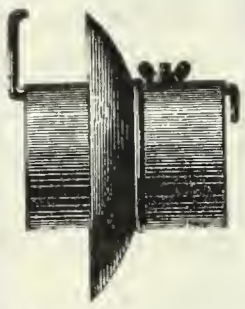

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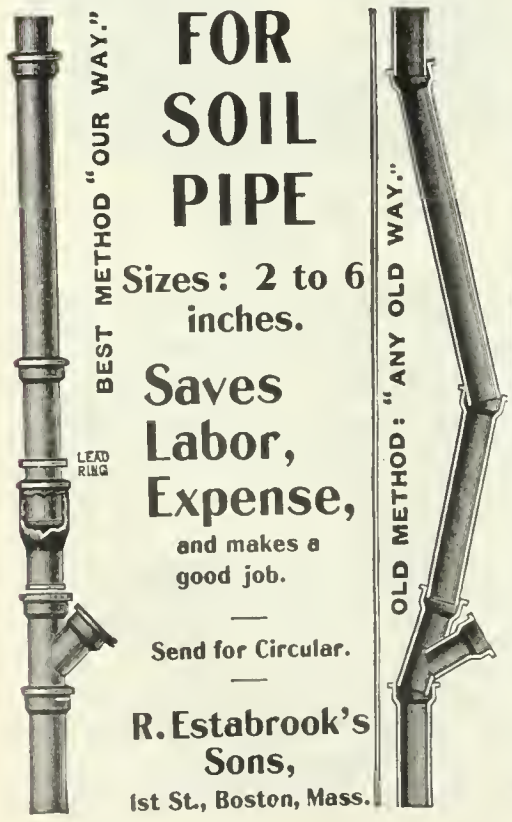

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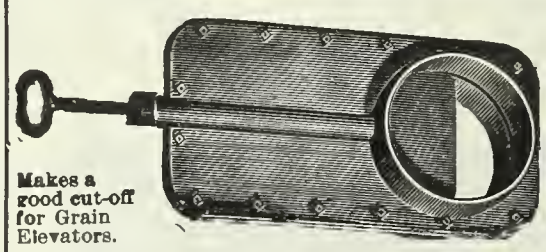

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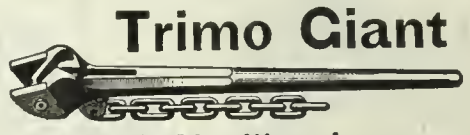

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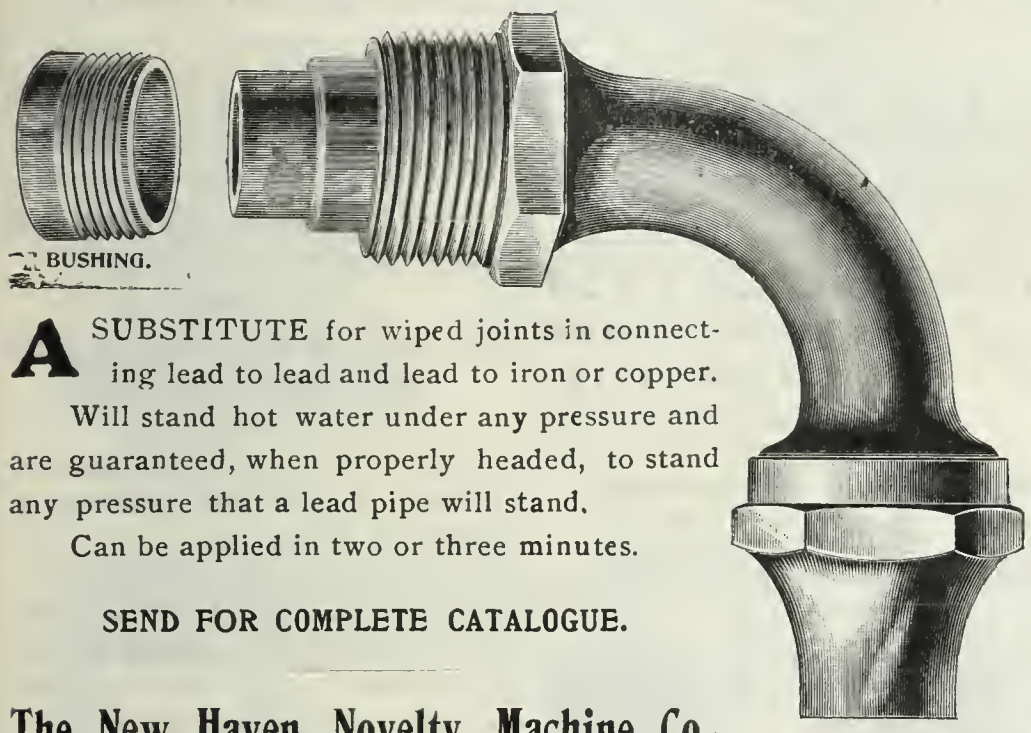

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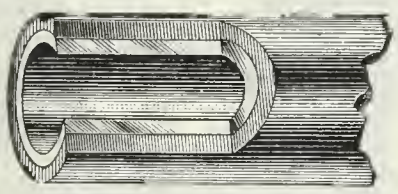

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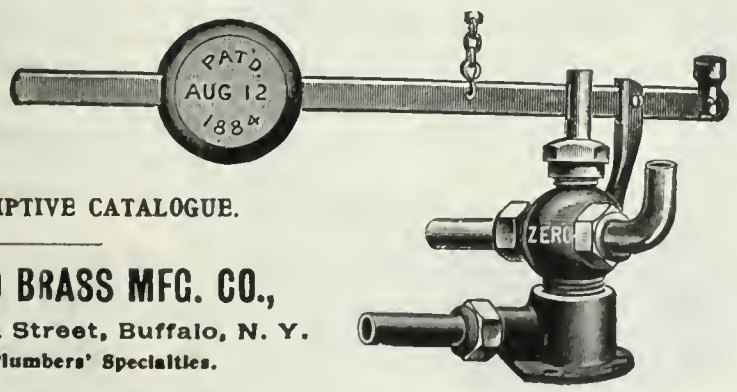

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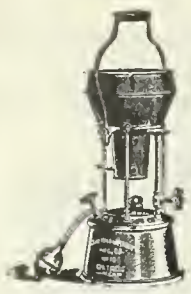

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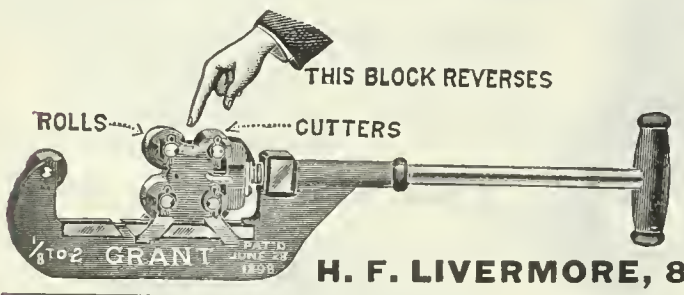

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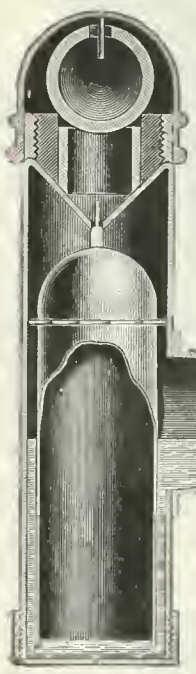

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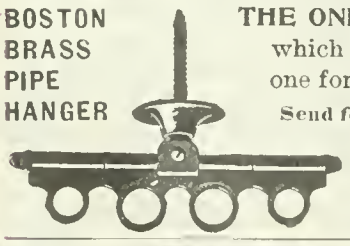

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This manual is, in short, well adapted to the practical requirements of plumbers and gas fitters.

TABLE OF CONTENTS.

FIRST ARTICLE.

Introductory,
The Distillation or Manufacture of Coal Gas,
The Distribution of Gas from the Gas Holder Through the Town,
Connecting the Meter in Buildings,
Inspection of Material and Work,
Laying Out Pipe,
Gas Fitters' Tools,
Piping the Building,
Measuring Pipes,
Cutting the Pipe,
Finding Leaks,
Putting Up Fixtures,
Gas Logs,
Economical Gas Burning.

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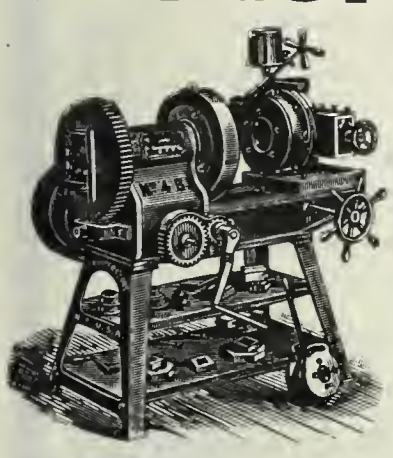

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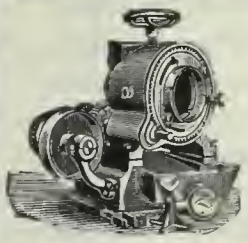

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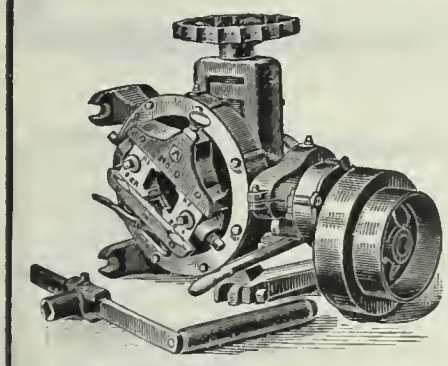

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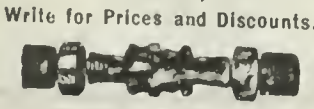

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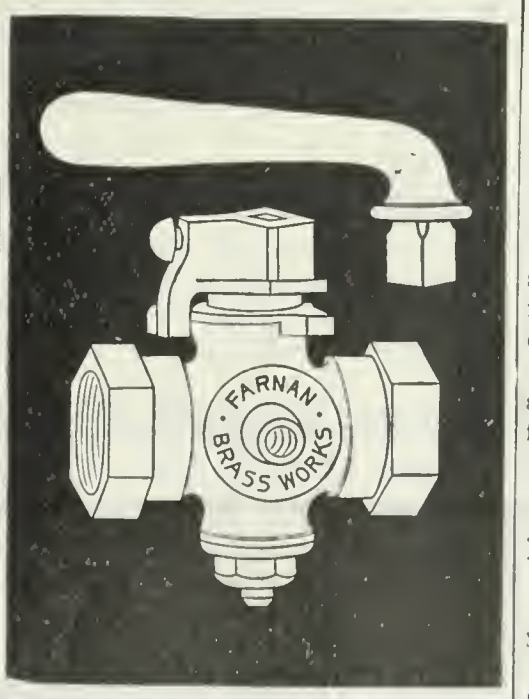

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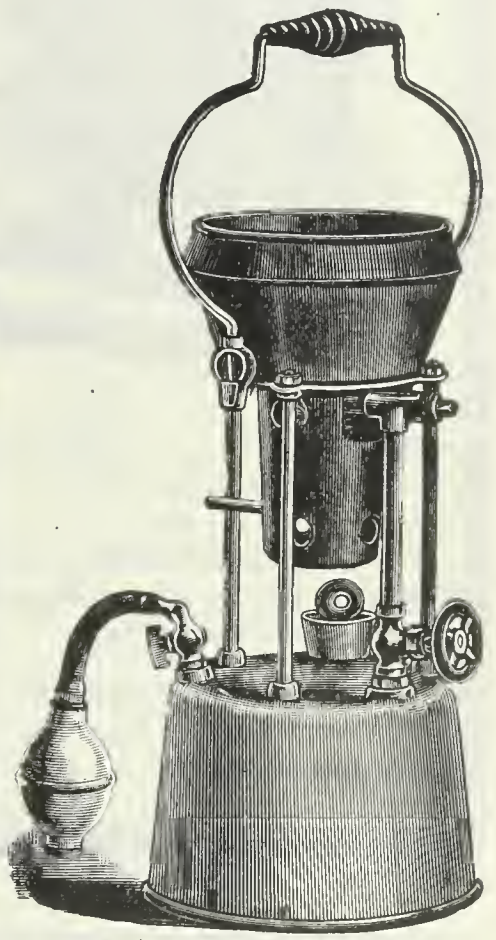

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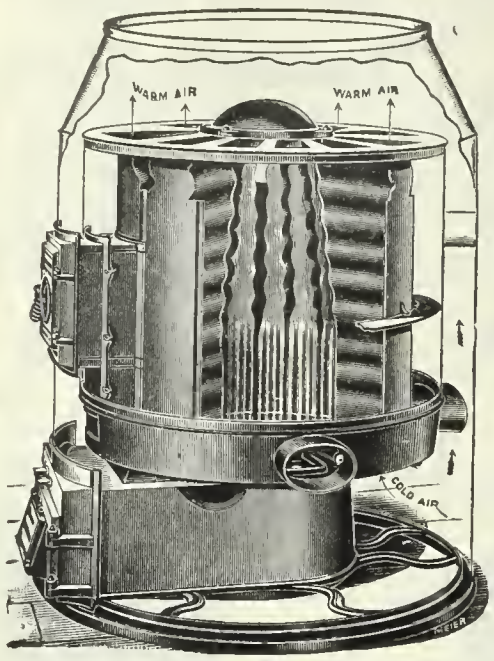

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This ware is now manufactured by our factory at Bellaire in the Brown Color only, same having been discontinued in all colors by our Portland, Conn. factory. ☙☙☙☙☙☙☙☙ Particular effort is being made to turn out a highly satisfactory and pleasing article, and all dealers are requested to order a sample lot to be convinced of the merit of this ware.

White and White Enameled Steel Ware

This ware will also be made by our Bellaire Factory only hereafter having been discontinued by the Portland Factory. A large line of hospital goods made in this ware ☙☙☙☙ Recommended where sanitary qualities are essential.

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NEW YORK AND CHICAGO.

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Volume LVI.....No. 5
Index to Reading Matter.....Page 59

Scarcity of Tin Plates

The fact that practically the entire tin plate manufacturing industry of the country, apart from that controlled by independent firms, is idle and may continue so for some time to come, is a serious matter, and is likely to cause hardship and inconvenience among a very wide circle should the present strike be unduly prolonged. For some months previous to the shutting down of the mills production was barely able to keep pace with the consumptive demand. When the production ceased the mills were found with hardly more than a week or two's supply of plate in stock, and with a considerable volume of orders yet to be filled. Since the consolidation of the greater part of the domestic tin plate industry under the American Tin Plate Company the jobbers have ceased to carry large stocks of plates in their warehouses, finding it more profitable to allow the manufacturer to carry the stock for them and to fill the requirements of their customers directly from the mill. As a consequence the existing restriction of output finds stocks of tin plates in second hands throughout the country very slim. At the present time, after three weeks' suspension of operations at the works, the country is almost bare of certain sizes of plates, and with no prospect of obtaining them within any reasonable time. This condition of things naturally imposes great inconvenience upon a large body of manufacturing consumers, especially the can makers and the smaller manufacturers of tinware and tin goods, who are not accustomed to carrying heavy stocks of material. Moreover, the hardship will extend beyond the manufacturers to other interests. The farmers and growers in many sections will be likely to suffer severely. The season is now beginning when the farmers are getting ready to sell their crops of various kinds to the canners, but if the latter cannot obtain a sufficient supply of cans they will be forced to decline to purchase the perishable produce and the growers may have serious losses forced upon them, owing to their inability to dispose of their ripening crops of vegetables, fruit, &c. The immediate effect of the shutting off of so large a portion of the tin plate output of the country has been that some of the dealers and larger consumers in the East have placed considerable orders for stock abroad. These supplies, however, are not likely to come into the market for some weeks. Moreover, most of the stock thus ordered is understood to have been already bespoken by manufacturing consumers who are obliged to have plates for purposes of filling contracts. Late advices report that prices of Welsh plates have been sharply advanced on the strength of the increased American demand, thus bringing them above the figures quoted for the domestic product, even under the recent advances on this side. The situation in the tin plate trade at the present time is a perplexing one for all interests concerned. Even should the mills resume operations within a very short time, the manufacturers will be unable to fill any new orders within at least three or four months. It is hard to see how an actual tin plate famine can be averted.

Midsummer in the Stove Trade.

In the absence of statistics a correct idea of the condition and amount of business done in the stove trade is always a matter of more or less conjecture. Inquiry among many of the stove houses in New York, however, leads to the conclusion that their order books will probably show that fully as large a volume of business has been done up to the present time as in the same period of any recent year. Those who are most interested find satisfaction in the fact that not only is the percentage of profit substantially better than in some previous years, but also that stove dealers and buyers are well satisfied with their purchases. This, in the vicinity of New York, is in no small degree due to the many meetings that have been held by the manufacturers of stoves. While these meetings have been largely of a deliberative character, without positive action, there is evidence that their influence has been to maintain a remunerative price for a good portion of the stoves marketed. It is probable that many manufacturers are disappointed that more has not been accomplished as a result of their meetings, but what has been done is a decided gain over that accomplished in some previous years under very much the same conditions. That there is evidence of sharp competition is not surprising at this season, yet it is quite generally recognized that the prices on some particular lines of goods show the benefit of the frequent meetings of the manufacturers earlier in the year.

The Opportunity of Cast Iron Heaters.

Another factor which is destined to play an important part in the stove trade of the year is the probability of a shortage of all kinds of sheet iron stoves, whether steel ranges, oaks or the simple sheet iron cylinder stoves used for heating. If the outlook for a scarcity of sheets should be realized it would be, doubtless, a hardship to many. To the retail dealer, however, and to those manufacturers who are carrying a large stock of cast iron heating stoves of older patterns that are not so popular as they were a few years ago, the famine in sheets may be turned to profitable account. So far as the dealer is concerned, if he cannot supply his customers with one kind of heating stove, he must draw their attention to those stoves which he can furnish, and those manufacturers who have been carrying over a stock of the less fashionable though excellent cast iron heating stoves, or who have patterns ready for producing them, will be likely to find a good market for their product. The stove trade may be congratulated on this op-

portunity to turn into ready cash any slow selling stocks that may have been carried in the warehouses and also on the prospect of more work for the foundries. If the shortage in sheets should afford an opportunity to clean out surplus stocks of this kind of cast iron heating goods there can be no question but that it would remove from the heating stove market a factor that might prove a menace to profits. It would be only a question of time when these goods would have to be moved, and if moved at a cut price the influence would surely be to the disadvantage of new goods and cause the latter to be sold at prices lower than would be beneficial to the trade.

Maintain Prices.

The season for the distribution of stoves already ordered is near at hand, and also for buying by those who have delayed from negligence or in order to take advantage of any possible break in the market. This will add to the rush that has never failed to come in the fall of any year. It should encourage those manufacturers who are nervous as to the disposal of their product to stand firmly for the little time that yet remains. If such a policy should be generally observed it would make a material difference in the profits of both the stove manufacturer and the stove dealer for the year 1901. There is nothing so demoralizing to the retail stove dealers as a break in prices at the beginning of the fall trade. It is far better for all concerned to enter the fall campaign with fair prices well maintained, than for the retail trade to entertain a fear that if they do not dispose of stock in hand they are likely to be undersold by competitors who purchase their stock at a later date. The circumstances of the average citizen are easy, there being abundant employment at good wages. There is no occasion to sell cheap goods when a little effort on the part of the salesman will enable the best goods to be readily disposed of at profitable prices.

The trade will observe under Notes on Prices the manner in which the United States Radiator Company are quoting prices so as to serve the convenience of their customers. With the system of list and discount, which is in use in this and in so many lines of goods, it is necessary to do more or less figuring in order to ascertain the net cost of articles purchased, and it is with a view to doing away with or diminishing this labor that quotations are issued in the form shown. The trade will certainly appreciate the regard thus manifested for their convenience and the effort thus made to render it an easy matter to keep in touch with current prices. This disposition compares favorably with the feeling on the part of some jobbers, and even manufacturers, that their interests are served by making it difficult for the trade to keep track of prices and thus buy carefully and judiciously.

In a recent bulletin issued by Carroll D. Wright, United States Commissioner of Labor, some interesting statistics are given covering the labor situation in Great Britain in the year 1899. One remarkable fact developed by these statistics is that of the total changes in the line of increase of wages and reduction of the hours of labor only 3 per cent. were secured through strikes. Of 1,175,576 individuals affected by such changes in the year 1899 only 34,273 had their wages increased in consequence of strikes, and of the whole number affected by changes in wages only 1132 had their wages reduced. The net results of all the changes last year showed an aggregate increase in the wages of working people in Great Britain of over $442,000 per week, the average increase per week for each employee being 37½ cents. Another interesting feature connected with this showing is that 53 per cent. of the employees affected by changes had their wages increased as the result of direct negotiation. In 32 per cent. they were the result of arbitration, mediation or other forms of conciliation, and in 15 per cent. they were the result of the automatic action of sliding scales. The improvement in the condition of the British workmen during the past seven years has been remarkable, wages having steadily increased during that period, while the hours of labor have been cut down in corresponding ratio.

A remarkable scheme for the establishment of a kind of labor Utopia is being agitated among the members of the various labor organizations in and around New York City. The plan contemplates the establishment of an industrial federation, which, according to the prospectus, proposes, when it can dispose of 500,000 shares of stock on the installment plan, to build a city for 500,000 people. The people are to run everything, including banks, factories and all kinds of industries, and generally conduct the business of the city. That the scheme is decidedly visionary may be concluded from the fact that the site on Jamaica Bay, Long Island, selected for the city is at present under water.

The activity in building in Chicago during the first half of this year presents a most gratifying contrast to the showing made during the same period a year ago. In the six months ended June 30, 1901, permits were taken out for the construction of 3145 building improvements, estimated to cost $17,779,965. These figures show a striking improvement over those of the first six months of 1900, when permits were issued for 1274 buildings, estimated to cost $4,536,540. These small totals were, of course, due to the prolonged strike in Chicago, which brought nearly all building operations to a standstill in the earlier half of last year. To what extent operations were suspended may be gathered from the figures for the first half of the preceding year, 1899, when permits were taken out for 2118 buildings, estimated to cost $11,865,200.

Morris Kaplan, a paint dealer of New York City, after a trial by jury, was fined $100 by Justice McLaughlan of Newtown, L. I., last week on the charge of having sold adulterated linseed oil in violation of the State law. The case was brought by the State Agricultural Department and is the first of its kind that has been tried in New York. The department secured 22 samples of oil and found that 13 of the number were adulterated with mineral oil. Ten actions have been brought in consequence by the Attorney-General. Three of the defendants have paid a fine of $100 without trial, and five cases will be tried next month. It is claimed that paint mixed with an adulterated oil will peel off in two or three months, whereas by the use of pure oil the paint should last for several years. The manufacturers of linseed oil claim that the oil is adulterated after it leaves their factories, and they are giving all the assistance possible to the State authorities in prosecuting offenders under the provisions of the law.

The City & Suburban Homes Company of New York, whose operations have been frequently referred to in these columns, filed plans this week for what is claimed to be the largest and finest tenement house in the city of New York. The new building will occupy a block on Avenue A, between Seventy-eighth and Seventy-ninth streets. On the first floor there will be nine stores, and the block will contain something like 200 apartments. Each set of apartments will be a complete private home and will face on the street, the rear fronting on a large central courtyard, so that plenty of light and air will be secured by every tenant. Each apartment will be provided with hot water, steam heat, gas range and washtubs in the kitchen, the aim being to provide every convenience that can be found in the most modern apartment houses. The building is to have four main entrances and eight stairways, and will be of modern fire proof construction.

Business Sketches in America.

Many readers of *The Metal Worker* will remember the visit to the United State of E. W. T. Richmond, managing director of Richmond & Co., Limited, London, England, which concern are interested in the manufacture of gas stoves and gas apparatus generally. Mr. Richmond, while traveling in this country, wrote a series of articles which appeared in the *Journal of Gas Lighting* of London, and which he has issued in a handsomely printed souvenir volume under the title "Business Sketches in America," with the subtitle "Some Methods Worth Emulating." The book is illustrated with fine half-tone engravings, the first showing a group of the London staff of the Richmond Company, taken on the occasion of Mr. Richmond's departure from England on October 20, 1900. The next gives a view of New York City from the steamer as it came up the Hudson River. Several other pictures of New York are followed by *fac-simile* reproductions of letters to the author from President McKinley and Sir Wilfrid Laurier, Premier of the Dominion of Canada. The first article treats of methods adopted by Americans for introducing gas goods to the attention of the general public, and the second is devoted to car lighting and a gas well drilling plant. The third article describes American systems of manufacture, the factory of the National Cash Register Company at Dayton, Ohio, being described and illustrated by a number of attractive views. The tower electric lighting system used in Detroit is also given attention. A fourth article is devoted more particularly to travel, and gives views of the City Hall in Philadelphia, a Boston steamer, &c., ending with a picture of the gas company literature and advertisements collected during Mr. Richmond's tour. The text is interesting and will doubtless give many new ideas to those of the author's friends who are fortunate enough to receive a copy of this dainty publication.

The J. C. Bartlett Company

of Pittsburgh, Pa., have issued from the press their first catalogue, in which they show in attractive style many of their leading lines of specialties in the way of stoves, ranges and heaters. The volume is made up of 64 pages neatly printed on a fine quality of surfaced paper and bound in colored paper covers carrying a design which is largely typographical in character. In the upper outer corner of each page is an ornamental piece consisting of a *fac-simile* of the company's trade-mark. In their introduction to the trade the manufacturers call attention to their casting department, stating that they are prepared to promptly furnish repairs for all stoves and ranges made in that district. They also extend an invitation to members of the trade to visit their warehouse, 632 and 634 Liberty street, Pittsburgh, and also their works at Newton, Pa., where may be seen "one of the best equipped stove plants in Western Pennsylvania."

The leading place in the catalogue is given to the Bartlett range made with removable steel oven and patented in February of the present year. The oven is well ventilated, and the manufacturers claim that there are no points to leak dust or ashes. Being made of steel of even thickness it heats readily, hence less time and fuel are required to do baking and roasting and to keep the oven in quick working order. The fire box is proportioned with a view to securing the most perfect combustion of the fuel, whether it be hard or soft coal or wood. It is broad and long, presenting a large surface of fire under the boiler holes and is said to do its work quickly. The lining of the fire box is anti-clinker, the main point of which is durability. The grate is of the duplex type; the flues are broad and can be cleaned through the flue door, or by taking out the oven, while the latter is fitted with a thermometer, which at all times indicates the temperature. The exterior is richly treated with carved ornamentation in combination with nickel work, and the manufacturers refer to the construction as "the greatest production in the range line of the times."

Following this stove is the Bartlett planished steel Kitchener, a handsome construction fitted with pull out duplex grate, and neverbreak oven rack and adapted for using hard or soft coal or coke. It is made with single and double ovens, the latter style being intended to meet large requirements. Among the heaters prominent attention is given to the Bartlett air tight, a handsome parlor stove with hot blast attachment, made also as a double heater. The Bartlett oak with large reflector ring, which it is claimed forces the heat downward, making it a great floor heater and foot warmer; the Regal Rosemont, an attractive magazine stove for hard coal; the Franklin Argand, a cheap open front parlor stove, and a line of cottage parlor, globe, cannon and laundry stoves are also shown. Several pages are devoted to the Bartlett gas range, constructed of cast iron and fitted with heat indicators, following which mention is made of gas laundry stoves, gas hot plates, the Bartlett portable furnace, miscellaneous goods, &c.

Pennsylvania Gas Furnace.

Schellhammer & Son, 323 Water street, Warren, Pa., who have made a specialty of the construction of hot air furnaces using gas for fuel, make the following claims for their Pennsylvania furnace. The Pennsylvania gas furnace is the original gas furnace and has been on the market for 12 years. There are now over 1100 of these furnaces in successful operation, and they have been used wherever a supply of natural gas is available, as far west as Kansas. A feature of the construction is the use of Wood's refined iron, not a piece of sheet steel being used. This material was selected as it has been found that it is not attacked by rust so readily as other materials. Skilled mechanics are employed in the construction of the furnaces, and the experience is that wherever one furnace is shipped into a new territory pleasing reports come from the dealers of the perfection of its workmanship. In operation no part of the furnace becomes red hot, owing to the construction of the fire chamber, and it is claimed to be practically indestructible. Furnaces that have been used for ten years have been found to be as clean as the day they were first set up. In consequence expense for repairs is conspicuous by its absence.

The spiral flue construction used in the radiator of the Pennsylvania gas furnace is peculiar to it alone and is one of its strongest features of merit. By this arrangement there is a positive circulation of the hot gases, and in traveling over such an extensive fire surface very little heat is allowed to escape to the chimney. Another feature which adds to the efficiency of the furnace is the admission of air to the burner through perforated screens at right angles to the burner proper. The cost of the operation depends entirely upon the price of gas, but it is pointed out that there is a saving of 25 to 50 per cent. for fuel with a Pennsylvania furnace over that consumed in furnaces made for burning coal. A furnace that will burn coal economically and prove durable cannot work as economically as a gas furnace, no matter how good a burner is supplied. Another point is that the efficiency of the Pennsylvania gas furnace is increased from the fact that there is no cast iron surface that is not heated, as in coal furnaees, but every inch of metal surface inside the casing of the Pennsylvania gas furnace is an efficient heating surface.

The construction of the furnace is fully described in a special catalogue issued by the manufacturers, and a circular giving suggestions in regard to furnace heating as applied to the Pennsylvania gas furnace if followed out will tend to make every furnace job undertaken a successful one. The burners used in the furnace are made in two sizes, of 1-inch and 1¼-inch pipe, being from 10 to 40 inches long. These burners are extensively used in coal furnaces, steam and hot water heaters, cooking and heating stoves, and for various other purposes.

The Excelsior Stove Works of Quincy, Ill., have decided to increase their capital stock from $60,000 to $80,000. At the same time their business is growing to such an extent that it has been found necessary to augment their facilities, and to this end they are erecting a new building, 100 x 248 feet in size and six stories in hight.

THE MICHIGAN STOVE COMPANY'S EXHIBIT AT THE BUFFALO EXPOSITION

Among the many interesting displays at the Pan-American Exposition at Buffalo one of more than passing interest to the stove trade of the country is that of the Michigan Stove Company, which occupies a place in Section W in the Manufactures and Liberal Arts Building. It is conspicuously located on a corner and its arrangement is such as to attract a great deal of attention on the part of visitors generally, and of stove men in particular. The illustration which we present herewith gives a very good idea of the exhibit, the engraving being made directly from a photograph.

The display, it will be observed, consists of a number of Art-Garland stoves and ranges, tastefully arranged in a pavilion constructed of wood and staff with ornamentation in white and gold. The inside of the dome is handsomely decorated by means of hand work, and in the extreme top of what might be called the foundation dome are electric lights. In the evening most brilliant effects are produced in the top dome, where is seen the cathedral glass representing the company trade-mark, "Garland Stoves and Ranges." The tops of both domes are painted in a delicate shade of blue.

Exhibit of Michigan Stove Company at Pan-American Exposition.

The background is of canvas, painted with Pompeiian red, and carrying the following inscription: "Largest Makers of Stoves and Ranges in the World. Awarded First Prize at Paris Exposition." The company's trade-mark is painted on both sides, with sufficient ornamentation running around to make the background exceedingly attractive. The name "Weed & Co., Buffalo," on the signs which are hung in the arches in front represents the company's Buffalo agents.

The stoves forming the display are set on a carpet which harmonizes in color with the background, and, with two or three exceptions, they represent the company's regular finish goods. The No. 300 Art-Garland, which is shown in the center of the group on the right, as well as the center base burner on the left, are solid nickeled stoves.

The Regal Oak.

The March-Brownback Stove Company of Pottstown, Pa., have brought out a stove which is referred to as something of a departure in the way of oak constructions. It is of handsome exterior, nickel being judiciously employed to accomplish the desired results, while the top is surmounted by a bronze urn of conventional design. The special feature of the stove is the concealed fire pot, this being accomplished by means of an open work screen. The stove is intended for using hard coal, soft coal or wood; is provided with an Eclipse duplex grate and the company's special slide damper, which is claimed to effectually check the draft and at the same time allow the escape of gas to the chimney. The stove is known as the Regal Oak and is offered in four sizes, the diameter of the fire pot ranging from 10 inches in the smallest to 16 inches in the largest. Attention is called to the new stove by means of a leaflet which is being sent out with the request that it be inserted in the company's supplementary catalogue between pages 22 and 24. This new construction adds one more to the company's already large line of oak stoves, and renders their assortment of especial interest to dealers handling heating goods.

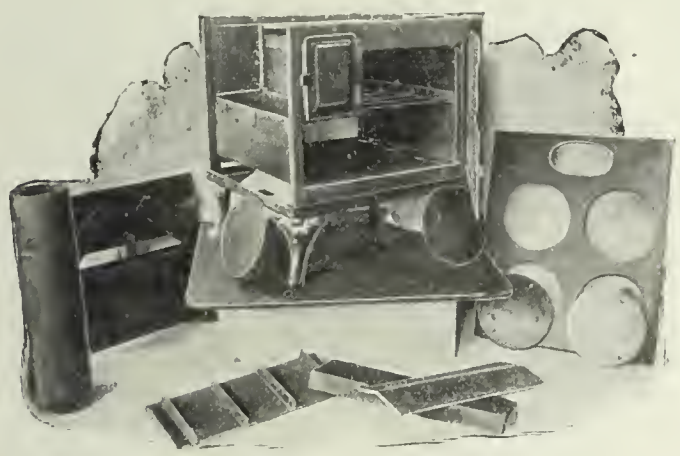
The Keeley Stove Company, Columbia, Pa., have redressed their Columbian Joy Return Flue Base Heater, making it more attractive than ever before. The Stove met with a large and gratifying sale last season, and the manufacturers feel that its new and elaborate dress for the present season will make it the leading seller for dealers to handle. Their Black Diamond Air Tight Stove is a new construction throughout, and embodies the latest improvements. It is made as a single and double heater, and without the magazine and hot air cap and cover it is known as the Black Diamond Circulator. Nickel is used in its ornamentation and exteriorly it presents a very attractive appearance. The company have issued some circulars illustrating these goods, also the Columbian Pilot, which is made in three styles and four sizes.

Norman Steel Range.

The Galusha Stove Company, Rochester, N. Y., point with pride to their Norman steel range, which they have recently brought out, intended for using coal and wood as fuels. It is of handsome exterior, certain parts being nickel plated, which affords a striking contrast with the black surfaces. The company state that they have equipped their steel range plant with the most modern machinery, and every stove body is formed, cut, blanked and punched with mathematical precision and accuracy, thus making every range uniform. For burning coal the Norman is equipped with a large oval fire box, and with duplex or dockash grate, as may be preferred, the linings being extra heavy and made of iron or brick, according to requirements. The duplex grate reversed serves as a grate for burning wood. The oven is of steel and the oven bottom is specially braced with angle irons so as to prevent warping or buckling. The flue, or smoke box, is made of cast iron, which, it is claimed, prevents creosote from rusting it out. The top is made in sections, so as to prevent warping; the broiler door is large, with draft slide, and the reservoir casing is made of cast iron, with a large enameled tank.

Folding Camp Stove.

The stove dealer not infrequently receives inquiries from campers, surveying parties and railroad men for some sort of sheet iron stove that can be readily transported, will not occupy much space, and that has a large cooking capacity and some durability. In response to such a demand M. R. Manhard of Marquette, Mich., made the camp stove shown in the accompanying illustration, about which he gives the following description: The stove can be taken all apart and carried on a man's back. The legs were the only part that were originally designed to be of cast iron, but later it was found desirable to have a cast lining in the stove, in order to enable it to last longer. The pieces shown directly in front of the stove in the picture are the front, back and grate in the fire chamber, and are made of cast iron. The piece standing at the left of the stove, beside the joint of pipe, is the front, and has two draft dampers in it, as shown. The piece to the right of the stove is the top. The stove was made of No. 22 sheet steel and the top of No. 20. The lids have a flat top, but are made in two pieces, and the bottom side is raised to stiffen them. The oven and fire doors are double. The stove is of the exact size of a No. 8 cook and weighs, without the castings, 118 pounds. The weight could have been very much lessened, but to the customer for whom it was designed this was no objection, as the durability that would be derived from the additional weight was desired. The first stove was made for a number of railroad surveyors, who used it all one season, moving it as they required it. This spring they started on a second surveying trip, using the same stove, which has had no repairs or attention, except a new taper piece of pipe. The stove is so constructed that it can be taken apart and set up again in ten minutes. It is hinged wherever it is possible, and the other joints are made with cleats which form a recess for the flange to slide in. When the stove is set up out of doors or in a tent it has given the best of satisfaction, both for baking and general cooking.



Folding Camp Stove.

New Defiance Range.

In the New Defiance No. 8 range the J. L. Mott Iron Works, 84-90 Beekman street, New York, have an up to date combination coal and gas range. In appearance it is a double range, the coal fire chamber being in the center. This chamber is made large in size and provided with a large water back to enable the range not only to have a large cooking capacity, but also to furnish a large quantity of hot water. In connection with the gas range there is a water heater of large capacity made from a coil of ½-inch copper pipe. This is designed to be connected at the top of the range boiler, and it is claimed that hot water can be drawn within five minutes of the time when the burner under the coil is lighted. Both gas and coal ovens are provided, with a bottom slide which draws out as the door is opened so as to bring the food outside the oven, where it can be basted or attended to as may be required. The coal range has six cooking holes on top, while there are four gas cooking holes over the gas oven. Above the range is a gas broiler and a large warming closet. The range is fully described and illustrated in a little circular which the manufacturers are issuing.

Gold Coin Stoves and Ranges.

The thirtieth annual catalogue of Gold Coin stoves and ranges, just issued by the Chicago Stove Works, Blue Island avenue and Twenty-second street, Chicago, is a most creditable publication. The illustrations in this catalogue are specimens of highly artistic engraving, and in every other respect the work has been well done by the book maker. The pages are oblong in shape, thus enabling two good sized illustrations to appear on each page. The catalogue comprises 64 pages in all.

A view of the extensive works of this company forms the prontispiece. The opening pages are devoted to illustrations of steel ranges. The styles shown embrace the Standard Gold Coin and Domestic Gold Coin. These ranges are massive in construction and elegant in design. The bodies are mounted with heavy gauge polished steel plate. All parts coming in direct contact with heat are thoroughly protected with cast iron plates and asbestos. The oven is reinforced by heavy cast iron braces and ventilated on an improved system. The oven door is evenly balanced and when lowered forms a large, smooth shelf. The Gold Coin duplex or antifriction draw center grates are interchangeable at a moment's notice. The tops are furnished with interchangeable key plates, permitting of 7, 8 or 9 inch covers. The reservoirs are extra large, furnished either in bracket pattern or low encased flush top. The high shelf and high closet are particularly spacious, adding much to the appearance of the range. The finish of these ranges is enriched by ornamental nickel panels and a nickel steel edge on the top plate. The Domestic line has a pouch feed and broiler door, which is very desirable for broiling or toasting purposes. These ranges are each furnished in nine sizes. The company also make the Gold Coin hotel steel range, in five sizes, with double ovens, double fire box and 12 cooking holes. All these ranges are intended for coal and wood or can be furnished for wood only.

A line of steel cooking stoves is shown comprising the National and Champion Gold Coin polished steel cooks. The National is designed for coal and wood and the Champion for wood only. These stoves are attractively finished and have large square ovens. They are each furnished in five sizes.

The cast ranges illustrated include a full line, from a fine high grade construction to popular priced ranges for those seeking the cheaper style of goods. These ranges comprise the Grand Gold Coin, Novel Gold Coin, Peerless Gold Coin, Regal Gold Coin, Victor Gold Coin and adapted to all fuels and all purses. The cast cooking stoves shown consist of the Gold Coin, Modern Gold

Coin, Mystic Gold Coin, Gold Medal, Model Gold Coin and Rival Gold Coin.

The leading heater made by this company is the Gold Coin Ventiduct base burner, which is shown in full perspective and in a diagram which enables the ventiduct principle to be thoroughly comprehended. The cold air from the room enters an aperture in the bottom of the stove, passing through two perpendicular tubes in the rear, thus becoming intensely heated, and passing out into the room at the top of the stove. The company's application of this principle is patented. Each stove is a double heater. The stove is elaborately trimmed with nickel, thoroughly ventilated to prevent tarnishing, and is furnished in three sizes. Other ventiduct base burners shown are the Ideal Gold Coin and Marvel Gold Coin. The ventiduct principle has also been applied to the Gold Coin round surface burner, which is furnished in three sizes. All these base burners are designed to use hard coal.

An interesting construction in the heating line is the Gold Coin hot blast ventilator, adapted to the use of hard or soft coal, coke or lignite. This stove has two distinctive features, the first being a ventilating hot air distributing system and the second a combined hot blast and check. The first keeps the air in the room circulating and preserves the fire pot by having cold air rushing around it inside of an open fret work at the front of the stove, from which it passes into the room back of the pipe collar. The second feature consists in taking foul air from the floor and discharging it through hot blast flues into the fire pot and thus increasing combustion. This stove is of handsome design, circular in form and is furnished in two sizes. Other heaters shown are the Gold Coin coal hot blast, the Prize Gold Coin oak, the Star Gold Coin oak, the Security Gold Coin oak, the Gold Coin air tight for soft coal, the Gold Coin coal parlor, the Iron Clad cannon, the Gold Coin globe, the Gold Coin jack globe, the Gold Coin wood hot blast ventilator, the Gold Coin wood parlor, the Gold Coin cottage, the Gem Gold Coin air tight, the Gold Coin Wood air tight, the Gold Coin square parlor, the Gold Medal Todd and the Ajax box, for wood. A line of laundry and tailor stoves is also shown.

Jewel Gas Heaters and Radiators.

A dainty catalogue of pocket size, treating of the Jewel gas heaters and radiators, has just been issued by Geo. M. Clark & Co., 72 to 76 Lake street, Chicago. This catalogue is by no means a small publication in the matter of contents, as it comprises 72 pages and gives details relative to 54 gas heaters and 21 gas radiators. The company thus manufacture a very complete line of gas heating appliances, giving their customers a variety which is probably greater than that afforded by any of their competitors.

The leading place in the catalogue is given to radiators. The Jewel Sanitary gas radiators are first considered. The Sanitary radiators use double tubes, which take cold air from the floor, pass it directly over the burners through the inside tubes and discharge it hot at the top of the radiator into the room, thus preventing any of the products of combustion from mingling with the hot air. The Sanitary radiators use a blue flame and are made in a range of sizes running from 4 to 12 tubes. Another series of radiators, ranging also from 4 to 12 tubes, are made without the inner tubes and are designed to burn an illuminating flame.

The next style of construction shown is styled the Jewel heater, which is a square stove with an open front, containing an aluminum reflector with an asbestos flame deflector. These heaters are made in two series, one for blue flame and the other for illuminating flame. Next comes another style of Jewel heater, also having a square body and open front, containing an aluminum double reflector. These heaters are made in a very wide range of sizes and in a number of different finishes. The other goods shown are cylindrical heaters, some burning with a blue flame and others with an illuminating flame, some having a central flue to discharge hot air at the top and others having an open front containing an illuminating reflector.

Another style of heaters shown has an oblong body mounted on an ornamental cast iron frame, having legs of good size, the whole construction being 23 inches high. This heater has a drilled burner backed by asbestos in the center of the stove, which throws heat down to be deflected by an aluminum reflector beneath, thus causing the flames as mirrored in the reflector to give a novel and pleasing effect. This reflector keeps the floor cool directly under it.

The various heaters made by the concern are furnished either in black finish, bronze finish or aluminum finish. All the castings and sheet steel bodies having the aluminum finish are treated with a liquid preparation, then coated with fine powdered aluminum, which is thoroughly rubbed in and baked in an oven at 300 degrees of heat, producing a beautiful and durable silvery finish that will not tarnish or wear off. The company state that the polished aluminum reflecting surfaces used in their heaters do not tarnish, but remain fresh and bright under all conditions.

The S Stoves and Ranges.

The Sheridan Stove Mfg. Company, Quincy, Ill., have just issued their second annual catalogue, giving a full description of the "S" line of stoves and ranges. This catalogue is handsomely gotten up and comprises 52 pages, which are oblong in shape, thus affording ample room for the display of cuts. The catalogue is bound in seal colored covers bearing a very artistic design in silver lettering. The ranges illustrated include the Select four-hole, for wood, in five sizes; the Select four-hole, for coal, in five sizes; the Select six-hole, for wood, in five sizes, and the Select six-hole, for coal, in five sizes.

The cook stoves embrace both steel and cast construction. The Steel Select cook stove, designed specially for wood, is furnished in four sizes. The Steel Select for coal is made with pouch feed and is also furnished in four sizes. The Select line of cast cooks is furnished in nine sizes for wood and in the same number of sizes for coal. The Surprise cast cook is furnished in seven sizes for wood and six sizes for coal.

The heaters consist of the Serene oak in five sizes, the Smokeless oak in four sizes, the Substitute oak in three sizes, the Supreme hot blast in three sizes, the Sunlet hot blast in three sizes, and sheet steel air tight stoves for wood which are furnished in four sizes. A special feature of the Smokeless oak stove made by this company is in the construction of the feed door, which drops precisely like a range feed door, having flanges on either side wide enough to prevent any coal or dust being spilled on the floor or carpet. Beneath the feed door is a check damper directly over the fire. By opening this an immediate check is put on the hottest fire.

ODD PLATES.

The plant of the Wheeling Gas Stove & Range Company, Reppto & Echols, proprietors, Moundsville, W. Va., was destroyed by fire early last week, but we understand it is the intention of the concern to rebuild at once, so as to be ready for fall trade. The new works will be on a more extensive scale than the old ones, thus giving the company increased manufacturing facilities.

The Danville Stove & Mfg. Company of Danville, Pa., are bringing out under the name "Beaver" a new line of double Heaters having full revertible flue, and will embody the latest features adapted to this class of Stove. The company are also getting ready an improved line of their Beaver Furnaces, which will embody new and unique features. The business of the company during the past year has been very satisfactory and the management looks forward to the future with a great deal of confidence.

The Gurney Foundry Company, Limited, of Toronto, Canada, are sending dealers handling their lines of specialties a large poster lithographed in colors, bound

at top and bottom with metal strips for the purpose of rendering it more durable. There is also an eye for hanging it on the wall. The design represents a kitchen interior with an Imperial Oxford Range in full operation, a smiling cook having just taken from the oven a well roasted turkey. The Imperial Oxford is represented as a substantial construction with handsome exterior, embellished here and there with nickel work.

W. F. CARROTT, who has been Northwestern representative of the Peninsular Stove Company for the past five years, has resigned his position with that company, having formed a connection with the Northwestern Stove Company and the Great Western Stove Repair Company of Minneapolis, Minn. Mr. Carrott is now an officer in these companies and will actively engage in managing their business. The Northwestern Stove Company have made excellent progress in building up a demand for their stoves. They will have three or four representatives on the road to explain the merits of their Select line of stoves and ranges. Mr. Carrott is thoroughly familiar with the details of the stove business, having long been engaged in it, and is well known to the trade in the Northwest.

WILLIAM M. NEWTON, Albany, N. Y., has issued an announcement, under date of July 26, of the fact that he has purchased from Walter E. Ward, the temporary receiver of Newton & Co., the entire Fire Brick and Stove Lining plant formerly owned by this well-known firm. The purchase includes the transfer of the entire business, including molds, patterns, implements, appliances, stock on hand and property of every description necessary for the successful conduct of the Stove Lining and Fire Brick business. Mr. Newton states that he has been owner of the real estate for three years, so that the purchase places him in possession of the entire business, which is now practically freed from all litigation which has hampered it for several years past. Mr. Newton has a wide personal acquaintance among the stove trade of the country, having formerly traveled among them in the interest of Newton & Co.

"GOOD WARM AIR" is the title of a little pamphlet which is being sent out by the Kelsey Furnace Company of Syracuse, N. Y., with a letter which states that 18,000 users of the Kelsey Generator are looked upon as 18,000 friends of the apparatus. This fact may induce the careful reading of four pages especially devoted to the quality and character of air that is enjoyed by those who have their houses heated with the company's system. The little book also contains a card on which are two testimonial letters giving plain statements that would be interesting to the prospective purchaser of a heating apparatus.

THE MICHIGAN STOVE COMPANY are steadily bringing out neat ideas for the use of their customers in advertising Garland Stoves and Ranges. A very effective device of this kind just being distributed is a small price sticker, having a gummed back, which is intended to be placed on all goods going out of the store. This sticker has a well executed reproduction of the Garland trade-mark and a blank space for writing the price of the article to which it is attached. In this way the Stoves handled by the dealer are persistently advertised.

THE ROBINSON FURNACE COMPANY, 107 Lake street, Chicago, enjoyed a large business during July, which showed a heavy increase over the corresponding month of last year. The company more than doubled their business during the first half of the year, and were never so crowded with work as at the present. Included in the business of July was one contract for 36 of their Tubular Furnaces, to be used in a large building operation in the northern part of the city.

THE many friends of W. M. Shaddinger of Chicago will be pleased to learn that he has so far recovered his health that he has concluded to re-enter the Stove trade. Mr. Shaddinger has accepted a position with the Brand Stove Company of Milwaukee, Wis.

JOHN A. SCHULTE & Co., Cincinnati, Ohio, manufacturers of Steel and Cast Ranges, Oak Stoves and Air Tights, are experiencing an excellent demand for their productions for the fall trade, although early in the season. Some improvements and minor changes have been made in their goods, and the company now have a thoroughly modern and up to date line to offer the dealer.

Michigan Retail Hardware Dealers' Association.

The programme for the sixth annual convention of the Michigan Retail Hardware Dealers' Association has just been issued, and an inspection of it shows that arrangements have been made for an exceptionally interesting and attractive meeting. The headquarters of the association will be at the Hotel Cadillac, Detroit, and the convention days are August 14 and 15.

The special feature of the gathering will be the trip to the "Flats" by the steamer "Tashmoo" on the second day. A start will be made at 8.15 a.m., arriving at the Mervue Club at noon, when dinner will be served. After dinner an executive session will be held, when the work of the convention will be completed. After supper the members will again board the "Tashmoo" for the return trip to Detroit. The day will thus be spent in a way that will, it is hoped, prove especially enjoyable to the association.

During the convention papers on the following topics will be read: "The Best Methods of Conducting a Retail Hardware Store," by R. R. Chandler, Coldwater, Mich.; "Credits and Collections," by R. J. Cleland of the Commercial Credit Company, Detroit and Grand Rapids; "Store and Window Dressing and the Best Method of Keeping Stock in Order," by Henry C. Weber, Detroit. An address will also be made on "The National Association and Its Possibilities," by a representative of the National Retail Hardware Dealers' Association.

It is hoped that this will be the best attended meeting in the history of the organization, and present indications, we are advised, bear out this expectation.

With a view to stirring up the active interest of the members of the association the memorandum slip printed herewith has been issued. It is a forcible and eloquent plea and should have a gratifying response:

To Members:

As a paid up member of the Michigan Retail Hardware Dealers' Association in good standing, it is your personal duty to attend this meeting and if possible to bring some neighboring Hardware dealer with you for initiation. The times demand a more perfect unification of interests. Organization is waxing greater every year. There never was a time when the possibilities for practical dollar bringing results were half so great as now. Do your part on this occasion and be a committee of one on membership. Last year many of the dealers did this. It is possible for all to do it in 1901. The Michigan Association will progress and grow no faster than the personal interest of its members.

Let us double our active membership at this meeting.

THE MICHIGAN RETAIL HARDWARE DEALERS' ASSOCIATION.

Gurney Refrigerator Company.

The Gurney Refrigerator Company, Fond du Lac, Wis., manufacturers of the Gurney line of refrigerators, are rebuilding their factory, which was destroyed by fire last April. They are erecting a very substantial brick building, which will be modern in every respect. Fire walls will divide the building into sections, making it almost impossible for fire to spread from one section to another. The company have purchased a very fine equipment of machinery, which is now on the ground ready to be installed. The contract with the builders calls for the building to be completed by August 15. The company therefore expect to begin manufacturing operations very shortly and will then place on the market a new and improved line of refrigerators. The factory will be of such capacity that the company are confident that they will be able to fill orders without delay in the busiest of seasons.

E. D. RHOADES has succeeded Rhoades & Overton in the Hardware, Stove and Sporting Goods business in Rensselaer, Ind.

Samuel D. Martin.

Samuel David Martin, senior member of the firm of Martin & Stover, dealers in stoves, hardware, &c., at Hagerstown, Md., died on Tuesday at the Maryland University Hospital, Baltimore, from peritonitis, following an operation for appendicitis. Mr. Martin was a native of Hagerstown, where he was born 52 years ago. He served throughout the Civil War in the Union Army and participated in a number of the most important engagements, rising to the rank of first lieutenant. At the close of the war he opened a stove and tin store at Williamsport, Pa., where he remained until 1872, when he went to Hagerstown and began the business with which he was connected up to the time of his death. Martin & Stover succeeded in building up one of the finest trades in their line in that section of the country, doing a large and safe business which has withstood all the tests of time and circumstance for over 30 years. The firm are well known to the stove trade, with whom they have an established reputation for integrity and fair dealing. Mr. Martin's removal will make a blank in the circle of his many friends in the trade. The funeral was held on Thursday afternoon at the German Baptist Brethren Church, Hagerstown, and the interment was made in Rose Hill Cemetery. Mr. Martin is survived by a widow and one son.

The Modern Lemon Squeezer.

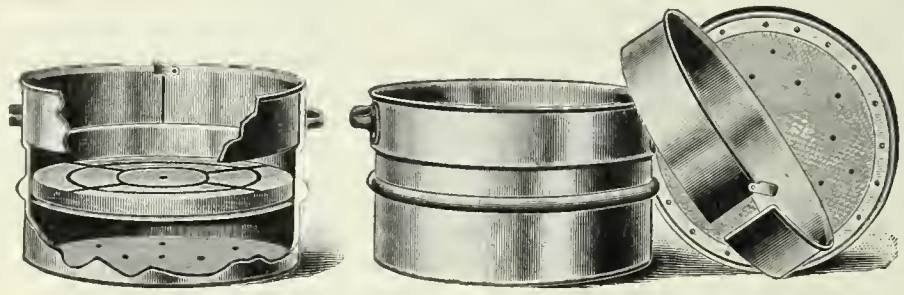
Gilchrist & Means, 43 South Canal street, Chicago, have brought out the lemon squeezer illustrated here-

The Modern Lemon Squeezer.

with. It has roller bearings and is so constructed, it is remarked, that a slight power applied to the handle will give 1200 pounds pressure against the lemon, thus extracting every particle of juice. It is pointed out that its construction is such that it will not splash juice over the operator, that it occupies no valuable space above the counter, and the handle hangs in the position shown in the illustration. All parts coming in contact with the lemon are made of solid polished aluminum, to insure perfect sanitary cleanliness. The other portions of the machine are handsomely nickel plated.

The Sturges Seamless Cheese Hoops.

An illustration is herewith given of the Sturges seamless cheese hoops, manufactured by the Sturges, Cornish & Burn Company, Chicago. The hoops are made from one sheet of steel, without soldered joints or seams, and are then heavily tinned and retinned to make them smooth and serviceable. The manufacturers call attention to the fact that the hoops have no rough edges of metal to rust or corrode, no rivets in the bottom to rust out, no rivets at the top to break or tear the bandage, and no cracks or crevices for the accumulation of mold and dirt. The company now have five sizes ready for the market and other sizes are in course of preparation.



The Sturges Seamless Cheese Hoops.

GALVANIZED WARE IN GREAT BRITAIN.

The special representative of *The Iron Age* in London writes as follows regarding the trade in galvanized utensils in the United Kingdom and the outlook for the introduction of American goods of this class into that country:

The trade in galvanized and japanned hollow ware in this country is confined to comparatively a small number of manufacturers. There is an enormous demand for this class of article, for galvanized buckets, coal scoops, foot tubs, watering cans, oil cans for collieries, turn up skips, seed hoppers, hand bowls, sanitary pans, corn bins, wrought iron kettles and 50 other similar articles. In addition to an exceptionally large home demand, the export trade in these goods is unusually large. At the present moment orders are rolling in from South Africa, Australia and India. The other day I saw an order for wrought iron kettles in four different sizes, 50 gross of each size, for South Africa. The price offered was not satisfactory to the seller, and no business was done. On mentioning the price, however, to a galvanized hollow ware agent, he told me he would be glad of the order at that price, and he saw no reason why it should not prove remunerative. The trade, however, is in a seriously disorganized condition, and there is not much harmony either among the manufacturers themselves on the one hand, or between the manufacturers and their agents upon the other. A gentleman who ought to know assures me that there is no reason why American exporters should not enter the market in these goods, subject, however, to their undertaking to make to English patterns and not to force American patterns here. He says that the steel plates and the galvanizing can be done more cheaply in America in large quantities, while freightage should not prove a serious difficulty, inasmuch as "nesting" can be almost universally resorted to. The especial changes from the American to the English patterns which are required would be, 1, iron rod handles instead of wire; 2, better riveting, and, 3, a circular base instead of the flat bottom so common in America. An agency was recently offered to a progressive agent in London by a Staffordshire manufacturer on the basis of 1½ per cent. It was refused as not being worth the trouble on that basis, and, after some haggling, 2½ per cent. was agreed upon. If American manufacturers can bring their prices down to 5 per cent. under English prices, and give their agents in London or Manchester 5 per cent., there is every reason to suppose that a good

home and export trade can be done. Freight rates from New York to South Africa are at the present moment more favorable than from Southampton or Hamburg. Although American hollow ware is, of course, in a very small way known in this market, American manufacturers as a body do not seem as yet to have seriously tackled the trade over here. I send herewith a few illustrations of the type of galvanized buckets which are favored in this market.

Fig. 1 is a patent galvanized bucket, with seamed sides, sold in 10, 11, 12, 13 and 14 inch sizes. If the sides are riveted the price is raised 1 shilling. Fig. 2 is a very strong contractors' galvanized bucket, with welded bar hoop top and bottom, stayed front and back. It is made in 11, 12, 13 and 14 inch sizes. Fig. 3 is a type of English galvanized round foot tub, made in ten different sizes and three different qualities, the cheapest, medium and strong, hoop or strapping being charged extra. Fig. 4 represents a galvanized deep turn up skip,

Fig. 1.—Galvanized Bucket, Seamed Sides.

Fig. 2.—Contractors' Galvanized Bucket.

Fig. 3.—Galvanized Foot Tub.

Fig. 4.—Galvanized Turn Up Skip.

GALVANIZED WARE IN GREAT BRITAIN.

with strapped bottom and bound under wire, the handles being 4 inches below or level with the rim. Made in three sizes and two qualities. These are representative patterns, and indicate the style of thing required on the British market. I shall be happy to supply any inquirer with prices and discounts upon application to the editor.

Domestic Garbage Burner.

The Domestic Garbage Burner Company of Salt Lake City, Utah, are distributing a 16-page pamphlet under the title "Behold! a Problem Solved," showing, in connection with a modern steel range, their domestic garbage burner, which consists of a sheet iron box arranged to be attached to the smoke outlet of ranges. In operation all refuse of the kitchen is placed in the receptacle, and, after being dried or carbonized by the hot gases passing through, it can be readily burned without an offensive odor. The construction is such that it does not interfere with the draft. The catalogue also shows the Harris Model hot air radiator, designed for use in connection with the smoke pipe of stoves, furnaces and boilers. The radiator, by its peculiar construction, presents a large amount of surface to the hot gases passing through it, and this heat is in turn transmitted to the air which passes over the heated surfaces. It is claimed that additional heating power is derived from the fuel, and also that an economy is effected by keeping the draft under better control.

F. H. Hill, who recently sold his interest in and severed his connection with the Hill, Whitney & Wood Company of Waltham, Mass., has opened an office and wareroom at 90 Canal street, Boston, under the name of F. H. Hill & Co., and will continue the manufacture of the Hill Champion Steam Cooker, the H-W Double Roast and Bake Pan, and the Victor Fry Pans and Broilers. He also will act as manufacturers' agent for the Gilray Curtain Stretcher Company, the Grass Mfg. Company and William Shimer, Son & Co.

Best-of-All Street Rubbish Cans.

The Central Stamping Company, 25 Cliff street, New York, are manufacturing under the name Best-of-All a new line of patent municipal rubbish cans, of which illustrations are presented herewith. These cans, as shown in Fig. 1, are made of strong sheet steel, thor-

Best-of-All Street Rubbish Can.—Fig. 1.—General View.

oughly galvanized after being made, to prevent rust. They are built with heavy lugs, upon which the bottoms rest when nested. This patented method of nesting prevents the cans from binding and brings the weight where it belongs, at the bottom, at which point they are reinforced by an iron rim, as shown in Fig. 2. By the use of these patented lugs the handles and rivets are released from strain and the can is saved from the dilapidated appearance so often shown by receptacles of this description. A special feature is the riveting of the lugs so as to prevent the sections from spreading under heavy use. The handles are similarly riveted, thus bind-

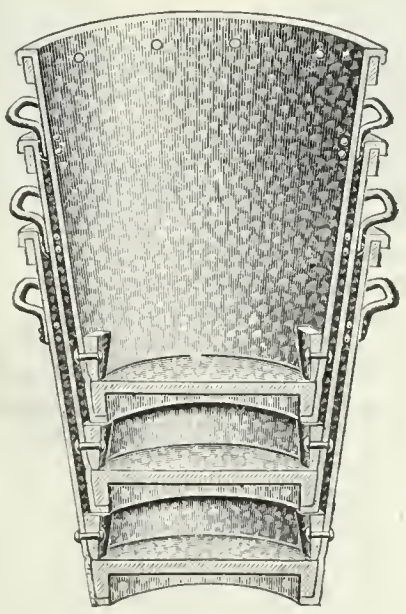


Fig. 2.—Cans Nested.

ing the parts firmly. The Best-of-All rubbish can has been tested in Greater New York and adopted as standard by the Street Cleaning Commission. It is also finding its way into use in many of the cities and towns that employ improved methods of sanitation.

Request for Catalogues and Quotations.

Peden & Co., Houston, Texas, who are large dealers in roofing materials, pipe and fittings, telegraph and telephone supplies, tinners' supplies, &c., are adding to their stock a full line of steam fitters' tools, supplies, packing, belting, &c., and will be pleased to receive from manufacturers of these goods catalogues, quotations, &c.

Stove and Hardware Dealers.

SAGINAW MFG. COMPANY, Saginaw, Mich., have added to their extensive line of Washboards an improved Glass Washboard, for which they are now about ready to fill orders. The rubbing surface being of glass, it is remarked that there is no chance for clothes to catch on the Board and be torn, and with proper care the Board should last for years.

THE ADAMS & ELTING COMPANY, Department 10, Chicago, have issued an artistically designed folder relating to their new Ad-El-Ite Tinted Enamels. These enamels are stated to dry hard in 12 or 16 hours and to produce a smooth, hard, lustrous and durable surface not affected by moisture or heat. They are applicable to walls, ceilings, furniture, picture frames, iron beds, toys, radiators and in fact any surface of stone, iron or interior finish. The folder reproduces the 18 tints in which these Enamels are made.

GEO. BRANDVOLD has disposed of his Hardware and Stove business in Rembrandt, Iowa, to Brandvold & Wellmerling, who continue at the old stand.

HOLLAND LUMBER & HARDWARE COMPANY, with stores at Gebo and Joliet, Mont., were damaged by fire at the former place a short time since. The loss was $13,800, on which an insurance of $12,650 was collected. The company are wholesale and retail dealers in Hardware, Shelf and Heavy; Stoves and Tinware, Farm Implements, Sporting Goods, &c.

CHAS. A. FOWLER has purchased the retail Hardware, Stove and Tinware business of L. F. Holloway, De Witt, Neb.

AT the picnic of the Chicago Retail Hardware Association, to which reference was made in our last issue, some merriment was occasioned by a conspicuous sign which some oue had placed on the rough counter of the principal refreshment booth. This sign informed everybody that the fixtures had *not* been furnished by the John D. Warren Mfg. Company of that city. Mr. Warren, who was present at the outing, was blissfully ignorant for a long time of the notoriety thus accorded to his concern.

MANN HARDWARE COMPANY, wholesale merchants, Greenwood, Miss., have increased their capital stock from $30,000 to $40,000, and are putting up a $10,000 storehouse. Their line includes Shelf and Heavy Hardware, Stoves, Tinware, Agricultural Implements, Sporting and Athletie Goods, &c.

THE Hardware stock of the Geo. W. Peck Company's store at Dansville, N. Y., was completely destroyed by fire on the morning of the 26th ult. They will immediately resume business in another building, and request the trade to send them catalogues and quotations on Hardware, Agricultural Implements and Plumbiug, Heating and Sheet Metal Goods of all kinds.

C. R. GUINN has lately entered the business field iu Violet, O. T. Mr. Guiun is carrying a stock consisting of Shelf and Heavy Hardware, Stoves, Tinware and Agricultural Implements.

SCHULTZ'S STOVE & HARDWARE COMPANY have been incorporated at San Antonio, Texas, with a capital stock of $30,000, by Max Schultz, Herman I. Schultz and William Schultz, to conduct a business in Stoves and Hardware.

FREDERICK MATTHES, who was in the plumbiug, heating, roofing and tinsmithing business at Lyons, N. Y., dled on July 25 as the result of au lnjury sustained some weeks ago in a fall from a scaffold on a building where he was workiug. Mr. Matthes enjoyed an enviable reputation in his town, and had served two terms on the board of Village Trustees. He is survived by a widow and six children.

United States Consul Mahin of Reichenberg reports to the State Department that the price of petroleum, whlch had materially advanced last year, is now steadlly declinlng in that part of the world. In the Russian oil district the deeliue is very marked, amounting to fully 50 per cent. at Baku since January 1. Thls is due to an increased production, amounting to about 25 per cent., as compared with the early months of 1900, and to a large accumulation of reserved stock. The reserve at Baku is now said to be about 7,222,000,000 pounds. In Russian petroleum circles the blame for these enormous accumulations is laid to the inadequate transportation facilities offered by the Government rallways.

Cleveland Prism Glass.

Cleveland Window Glass Company, Cleveland, Ohlo, are manufacturing the Cleveland prism glass for lighting up lnteriors wlth natural light, by means of prisms so arranged that beams of sunlight are bent and carried into otherwlse comparatlvely dark rooms, on a plan wlth the floor and ceiling, more particularly street floors,

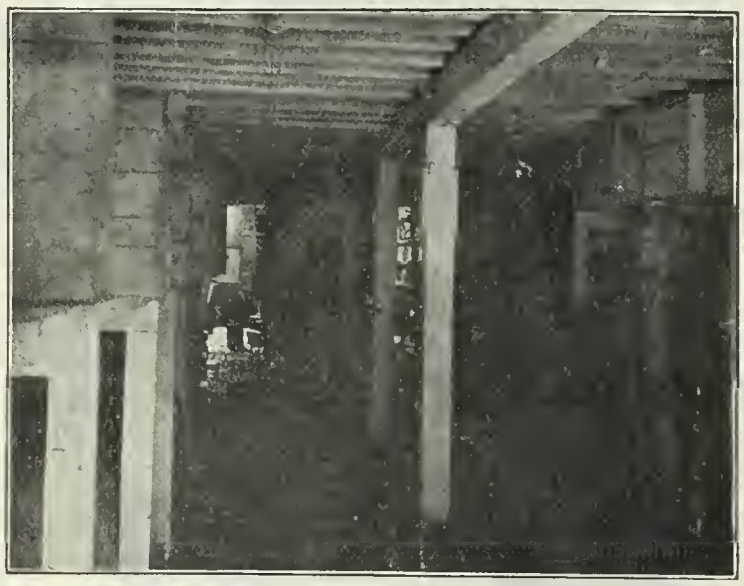


Fig. 1.—A Cellar without Prism Glass.

celiars and kindred places. although they are also used much higher up. The glass prisms are made in 4-lnch squares, which are set in either zlnc or copper frame work, according to the cost, the slze of which depends on the dimensions of the sash to be covered. They can be furnished for sash or in a separate frame to go outslde the sash. Applied to old work the frames are seeured to the outside of the window, usually covering the

Fig. 2.—Same Cellar with Five Feet of Prism Glass.

upper half of it, the lower portion remaining plain glass to see through. The frame work of prisms ls sometlmes vertical and often at an angle wlth the elevatlon of the building, according to the requirements of the sltuation. Fig. 1 illustrates a cellar interior 85 feet long, as it was, with only one window at the end, Fig. 2 being designed to show the great lucrease of natural llght produced by the installation of the prisms.

The Amalgamated Associatlon strike is affecting the railroads materially. One of the principal roads runnlng from Chieago to the East ls reported to have had contracts canceled for more than 1000 carloads of freight as a direct result of the strike.

WILMINGTON PLUMBING RULES.

The authorities of Wilmington, Del., have recently put in force a new set of plumbing rules, consisting of 47 sections. The new rules, which give considerable authority to the plumbing inspector, require that no one shall be eligible for this office without having had five years' practical experience and having been a continuous resident of the city for a period of five years previous to his appointment. It is necessary that he should take an oath that he will faithfully enforce the rules and give a bond of $2000. His salary will be $1500 a year. Those who desire to engage in plumbing must prove their competency, when a license will be granted on the payment of a fee of $5. Applicants are required to file with the secretary of the Street and Sewer Department an approved bond in the sum of $1000. They must also deposit with the board the sum of $25 to protect the department from negligence or imperfect workmanship in opening or closing streets for sewer and water connections. It is required that the words "Licensed Plumber," in letters not less than 3 inches square, shall be displayed conspicuously in front of their places of business. The regulations also require that plans must be submitted to the plumbing inspector and the department after the detailed drawings showing the arrangement of the work and the method of doing it are completed.

One section of the regulations provides that no master plumber shall allow his name to be used by any other person or party, directly or indirectly, for the purpose of obtaining a permit, or doing any work under his license, nor shall he sublet any part of his work to any other master plumber without first obtaining a special permit from the plumbing inspector. The penalty for the violation of the provision is the revocation of the license or a fine of $25, or both, at the discretion of the board. Another of the regulations provides that persons from other places may do plumbing in Wilmington by securing a special permit from the department for any one particular job, upon satisfying the inspector that the applicant is a legitimate master plumber engaged in the business and having a license from the officials of his own town. In case more than one permit is required the applicant must comply with the conditions presented in section 3 of the regulations, which is that they must take out a regular license to do plumbing work.

LEAD BURNING.

When lead burning is spoken of among lead working mechanics the opinion is often expressed that the art of lead burning is of very little use, owing to the infrequency with which it is in demand. There are several old established fields in which lead burning is needed, and within the past few years a new one has been added to its sphere. Wherever there is any considerable manufacturing done in which brass and copper goods or metal goods of similar character are produced lead lined tanks are important factors in the equipment of a plant. This also holds good in many towns where dress fabrics are produced. Also, wherever there is a chemical plant manufacturing different chemicals or a laboratory for reducing ores and smelting, lead lined vats and tanks are indispensable. The only substantial method of joiuing the different sheets which line such tanks is the lead burning process, which consists of melting the two edges of the different sheets so that they fuse together in one mass.

Of late years the lead burner is not infrequently called in to run the waste pipes from chemical laboratories or in jewelry manufacturing shops, where strong acids cannot be discharged into the usual cast iron drain pipe, owing to their destructive effects. The drainage system, under such conditions, naturally must consist of lead, and the only way to connect the different pieces of lead pipe is by lead burning. In such cases, owing to the places in which the lead pipe must run, the skill of the lead burner is often taxed to make satisfactory connections.

The use of storage batteries for electrical purposes within a few years has also very greatly extended the field of the lead burner. It is only necessary to visit some of the large plants to find an almost endless number of lead lined tanks in which the seams are joined by the lead burning process. In places where these batteries are recharged, if the acidulated water was poured out and allowed to run into the ordinary drain without dilution, it would mean an early destruction of the drain. In some cases the floors of such buildings are covered with heavy sheet lead with the seams burned together, and the floor made to pitch to a point where the lead drain pipe carries away the solution. The discharge is regulated by a workman, who allows the water to flow in, diluting the solutions to such an extent that they become harmless. In some instances the floors of such buildings are covered with concrete and drain to a lead collector, where the dilution is effected.

An investigation of the many cases in which lead is used for holding acids will lead to the conclusion that lead burning, which seemed to be almost a lost art and unnecessary in the trade but a few years ago, is now gaining a new lease of life and bids fair to be in greater demand than ever before.

The Royal 1900 Air Valve.

In the accompanying illustration we present a general and a sectional view of a new automatic air valve that is being put on the market by the Pierce, Butler &

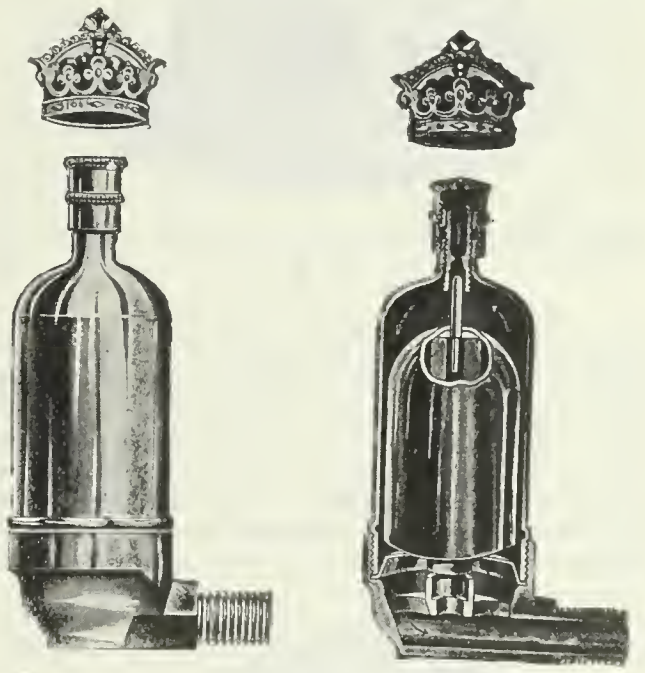


Fig. 1.—General View. *Fig. 2.—Sectional View.*

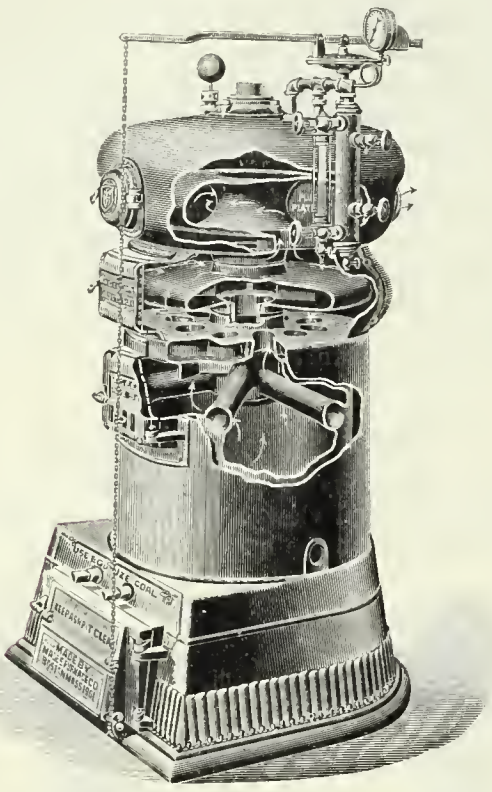
The Royal 1900 Air Valve.

Pierce Mfg. Company of Syracuse, N. Y., and 46 East Twentieth street, New York City. This automatic air valve has a ball joint siphon float so constructed as to allow the escape of cold air, but which will close upon escape of water by floatation, and of steam by expansion. The patent ball joint is said to make a perfectly tight joint, which prevents leakage. A deflector is provided which prevents excessive air pressure from raising the float and prematurely closing the valve. In this new and improved construction a siphon is formed in the base, which allows the water of condensation to leave the valve quickly and return to the radiator the instant the valve closes. This enables the valve to free a large radiator from air much quicker than with the best makes of the ordinary air valve. The expansion rod is of a composition which is said to be very sensitive, operating quickly and which has indefinite lasting qualities. The valves are made of the very best material and best workmanship, so that they are fully guaranteed. A pamphlet devoted to these valves has recently been completed and can be secured on application.

The Supervising Architect at Washington, D. C., will receive bids until August 22 for installing a new boiler plant in the United States Marine Hospital at Cleveland, Ohio.

The Magee 019-190 Boilers.

Efficiency and economy in operation are prominent features in the new series of 019-190 Magee boilers, which the Magee Furnace Company, Boston, Mass., are presenting as one of their Twentieth Century lines of heating apparatus. These boilers are designed for both steam and hot water heating. In Fig. 1 a sectional view of the steam heater is shown, from which the construction and operation can be readily seen. Fig. 2 shows the fire pot section, a special form of coustruction designed so that the heating surface may be exposed to the direct rays of the fire, and also to provide for an internal circulation which will maintain a steady water line when the boiler is used for steam heating. It will also be noted that openings are provided for the hot gases rising from the combustion chamber to pass to the flues formed by the outer casings and the upper sections. The arrows show the movement of the gases, from which it will be readily seen that before escaping to the chimney their principal heat is utilized for heating water or making steam.



The Magee 019-190 Boilers.—Fig. 1.—Sectional View of Steam Boiler.

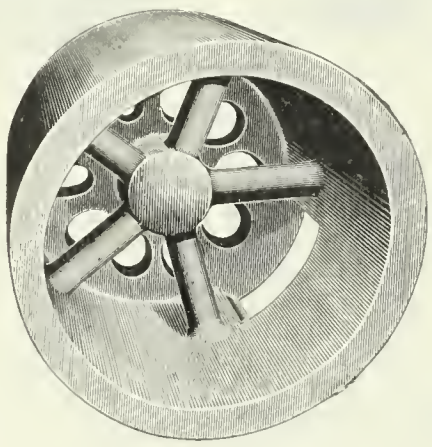


Fig. 2.—View of Fire Pot Section.

Not less important than the efficiency and economy of operation is the facility with which these heaters may be set up by the steam fitter. The top section in this series, when used for steam, is made with a larger chamber at the top to serve as a steam dome. This chamber, when the apparatus is used for hot water, is not necessarily so large and the heater is somewhat reduced in hight. Another interesting feature is the provision of a substantial base supporting the upper parts of the heater. This base is so arranged that the entire labor saving grate may be removed to the front of the ash pit by the simple removal of one plate. The heaters are made in five sizes, having grates 19, 22, 25, 28 and 31 inches in diameter, and the heaters vary in total hight from 57 to 63 inches. They are rated to carry 600, 825, 1100, 1400 and 1800 square feet of direct hot water radiation when the piping is calculated as heating surface. The company have just issued a new 12-page pamphlet printed in two colors, containing a full explanation, including tables of dimensions, of this new line of goods.

The Page Boiler Catalogue.

A new catalogue has been issued by the W. H. Page Boiler Company, consisting of 36 pages bound in a dark green cover, bearing a design in silver bronze in which the name and address of the company are given. The introduction states that the boilers made by the house have been introduced in many parts of the United States, and the increasing demand for them is the best evidence that they have satisfied the purchasers. The meritorious features of the boilers are made the subject of a special page. The first 11 pages are devoted to the Volunteer steam and hot water boilers, which are of the round horizontal sectional type, made in 14 different sizes, with grates from 15 to 42 inches in diameter. The All Right steam and hot water boilers occupy five pages and are made for brick setting, the sections being of horizontal type. These boilers are made in four sizes, having 18, 21, 25 and 30 inch grates. The Monarch is a new vertical sectional boiler of the return flue type. The sections are made with an upper and lower crown sheet to increase the fire surface, and are connected by means of screw nipples. The sections rest on a substantial base, which also supports a grate of the labor saving type, arranged so that any section can be readily removed. These boilers are made in six different sizes, having grates 38 inches wide. The Page safety sectional boiler is well known to the trade and is designed for brick setting. It is made in eight different sizes, having grates 48 inches wide. The Hornet steam and hot water boilers, made in three sizes, are rectangular in shape and composed of but three castings—base, fire pot and dome section—the castings being so made as to secure an indirect draft. The catalogue contains a complete telegraphic code.

New York City Notes.

Manhattan branch will give its annual outing and Rhode Island clambake at the Crocheron Hotel, Bayside, L. I., Wednesday, August 28. The committee, composed of T. J. Tuomey, John Renehan, T. F. Gaynor, J. W. Cooney, I. O. Shumway, J. W. O'Brien and E. J. Brady, promises to make this outing "the finest that ever happened." Tickets are to be obtained of John Renehan, 163 East Thirty-fifth street. There will be games of all descriptions, and boating, fishing and swimming matches for valuable prizes.

* * *

Trade still continues brisk in most shops, the only trouble being to get enough material as wanted.

* * *

Among the busy plumbers are J. H. Steinmetz, who has an apartment house at 142-146 East Twenty-seventh street; C. E. Innes, with an apartment at Seventy-eighth street and Broadway, and Wm. Messer, with a row of tenements at Baxter and Bayard streets. Jos. Bloch has five flats on 111th street, between Fifth and Madison avennes; Rosenbluth & Dowling have an apartment at Madison avenue and Ninety-ninth street, and Callan & Oliver a row of flats on 140th street, between Lenox and Seventh avenues.

* * *

The labor troubles of the journeymen have again extended to Brooklyn, where all the other mechanics on the job have left the new building of the naval branch of the Y. M. C. A., donated by Miss Helen Gould, and

where the plumbing is being done by Chas. Tucker of Manhattan, who employs Amalgamated men. The complaint was made by Local Union No. 1 of the United Association.

* * *

The Executive Committee of the Greater New York Association will hold its August meeting in the Mohawk Club rooms, Far Rockaway, L. I., on Monday, August 5, at 4 p.m. No doubt they will be well taken care of by the Rockaway members.

Heating and Plumbing Notes.

THE CENTRAL FOUNDRY COMPANY have decided to dismantle their Soil Pipe plant at Gadsden, Ala., and remove the machinery to their Bessemer, Ala., plant. This will make the company's plant at Bessemer the largest Soil Pipe establishment in the South.

S. B. CHURCH, Seymour, Conn., is erecting a 50,000-gallon water tank for the Smith & Griggs Mfg. Company, Waterbury, Conn., for fire protection. The tank will be supported on a 12-post steel frame, 60 feet high. Mr. Church is making a specialty of Gas and Gasoline Engines for machine shops and small manufacturing plants, and carries in stock and can furnish promptly any size Engine up to 60 horse-power.

THE HOPSON & CHAPIN MFG. COMPANY, New London, Conn., will furnish the heating apparatus for the Winthrop School in that town.

THE striking plumbers at Marion, Ind., being unable to adjust their trouble, have opened a plumbing shop in that city.

REUBEN PURSER died suddenly at his home in Windsor, Canada, July 22, at the age of 75 years. He conducted a plumbing and Hardware business in Windsor for 35 years and retired about two years since.

JOSEPH B. FORD, who has been in the plumbing business at Hinsdale, Mass., for a number of years, has closed out his stock and will retire from active business.

A FIRE occurred in the plumbing shop of Lundwall & Rich, at Bozeman, Mont., doing damage to the extent of $800.

THE journeymen plumbers of Fort Worth, Texas, have withdrawn from the Building Trades Council.

COLWELL LEAD COMPANY, 63 Centre street, New York, have favored us with a miniature specimen of their Cuckoo Embossed Wash Down Closet Bowl, with seat attachment, which the company have had specially modeled and which they are sending out to their numerous customers. The model, which can be used as a paper weight, a pin holder or a match holder, is a very appropriate article for a plumber's desk. It is an exact copy of the Cuckoo, which is the most popular of the company's Bird series of Wash Down Sanitary Closets.

THE School Board of Oskaloosa, Iowa, will receive bids until August 6 for a steam heating plant for the First Ward School Building in that town.

G. W. GERWIG, secretary of the School Board of Allegheny, Pa., will receive bids for a heating plant for the Allegheny High School and annex.

GEORGE STOTHART, secretary of the Board of School Trustees of Chatham, New Brunswick, will receive bids until August 10 for a hot water heating plant and plumbing for a new school building in that city.

A NEW board for the examination of plumbers has been organized in Montreal, Canada, composed of Commissioner of Sanitary Engineering Doré, Building Inspector Chausse, and J. W. Hughes, who is well known to the plumbing trade both of the United States and Canada.

THE KELLY & JONES COMPANY have purchased property on Water street, Pittsburgh, having a frontage of 70 feet and a depth of 160 feet, and will erect on this site a ten-story fire proof building to serve both as a warehouse and district sales office.

THE Committee on Public Buildings, Portland, Maine, at a recent meeting awarded to A. R. Turner, at his bid of $2697, the contract for heating and ventilating four school buildings. Wiley & Calhoun secured the contract for plumbing the school house at Lunt's Corner, Ocean street and Deering Center, and the plumbing of the Saunders Street School was awarded to James Miller.

A FIRE, of unknown origin, on July 25, did damage to the extent of $3500 to the stock and building occupied by the N. O. Nelson Mfg. Company at the southeast corner of Eighth and St. Charles streets, St. Louis, Mo.

GEORGE D. WORRELL of Mount Holly, N. J., bid $1448 and secured the contract for plumbing the new model school building at Princeton, N. J. Mr. Worrell has purchased a shop in Princeton on Alexander street and will conduct a plumbing and heating establishment there.

A. C. THOMPSON & Co. bid $8000 and secured the contract for heating, plumbing and ventilating the new Court House at Sydney, Cape Breton.

THE LOUIS LIPP COMPANY, Cincinnati, Ohio, have purchased a tract of ground at the intersection of Mitchell Avenue and the B. & O. S. W. R. R., Cincinnati, Ohio, the frontage on the railroad being 1500 feet, where they will at once commence the erection of new brick and stone structures as follows: Two main buildings fronting on Mitchell avenue and extending along the railroad 550 feet long by 100 feet wide each, and another large building will be used as a foundry and enameling shops. The company made a specialty of the production of Plumbing Goods, Bathtubs, &c., and one of the buildings will be used exclusively for the production of Plumbers' Wood Work used in connection with Bathtubs, Closets and Tanks. The entire plant, it is stated, will be the largest of its kind that is independent of the combination. The officers of the concern are Louis Lipp president and Albert Weil secretary and treasurer.

THE Board of Health of North Adams, Mass., have appointed Peter Connors, L. A. Weston and Fred Todd as a board of plumbing examiners.

THE Board of School Commissioners of Indianapolis, Ind., will receive bids until August 16 for a steam heating plant for School No. 45, at Park avenue and Twenty-third street, in that city.

THE NATIONAL FILTER COMPANY OF NEW YORK, 15 East Fourteenth street, New York, is the name of a new company recently formed to take over the business of the Gate City Filter Company. They are manufacturers of and dealers in all types of Water Filters for household and general use, including the Morrison Gravity and Pressure Filters. The company will also exclusively manufacture the Gate City Gravity and Pressure Water Filters, as well as representing directly for the Atlantic States and export trade the National Tripoline Company, from whose mines in Missouri the natural filtering stone is taken. The National Tripoline Company are manufacturers of all kinds of Tripoli products, including Filter Tubes, Cylinders, Blocks, Disks and shapes of all sizes and proportions, together with Tripoli in various colors and degrees of fineness.

THE WILLIAM POWELL COMPANY, Cincinnati, Ohio, manufacturers of Steam Brass Goods, will shortly enlarge their pattern shop and foundry by the erection of substantial additions, as these departments are at present overcrowded.

THE CHAPMAN VALVE MFG. COMPANY, Indian Orchard, Mass., will begin work at once on an addition to the main building, 40 x 22 feet, one story high, which will be used for a japan room.

THE works of the Atlantic Tube Company, at Beaver Falls, Pa., will be offered for sale by order of the receiver on August 6. The plant makes Seamless Tubes and it is probable it will be bought in by the bondholders.

THE PITTSBURGH SEAMLESS TUBE COMPANY of Pittsburgh will apply for a charter on August 16. The concern propose to build a works in that city for the making of Steel Tubes.

THE AMERICAN SPIRAL PIPE COMPANY, manufacturers of Spiral Riveted Pipe, will erect a building for their special purposes on Paulina street, south of Blue Island

avenue, Chicago. It will cover a ground space of 80 x 150 feet.

THE Supervising Architect at Washington, D. C., will receive bids until August 21 for a complete heating apparatus in the United States Post Office at Elgin, Ill.

THE F. L. SMITH PLUMBING & HEATING COMPANY of Pawtucket, R. I., have taken a contract to install six Gurney Steam Heaters and do the plumbing in four new houses for Herbert E. Sadler of South Attleboro, Mass. They are also using two Gurney Boilers in houses being erected by George Broadbent, in their town.

O'TOOLE BROTHERS, Clinton, Conn., are putting the Kelsey system of heating in the Jefferson House, at Groton, Conn.

THE BROOKLYN GALVANIZING & MFG. COMPANY, corner of Kent avenue and North Tenth street, Brooklyn, N. Y., have informed the plumbing supply trade that they have enlarged their facilities, and have also increased their large and varied assortment of stock at their Kent avenue works, in order to insure their customers prompter deliveries in either Black or Galvanized goods. The Brooklyn Galvanizing & Mfg. Company are owned by the Foran Foundry & Machine Company of Flemington, N. J.

DURING the hot weather the benefit to horses derived from a shower bath has been quite noticeable, and John O'Brien, superintendent of the City Water Works of Waterbury, Conn., has devised a special shower bath apparatus for this purpose. He ran up an ordinary iron pipe to a point about 8 feet above the ground and connected a cross pipe having a sprinkler at each end. These sprinklers were arranged to throw a spray, and the distance between them was adjusted so that the entire body and head of a horse would be readily subjected to the cool shower. Where this shower bath is used judiciously, there can be no doubt of the benefit attending its use.

PLUMBERS who desire some better method of connecting soil pipe when a new length or a new fixture is inserted than the old method of taking the lead out of several joints and springing the stack into line should send to the Vanderman Plumbing & Heating Company, Willimantic, Conn., and get one of the little cast iron models of the Vandermau Insertable Joint. The casting is less than 1 inch in diameter at its largest point and is made in two parts, the hub end being a little over 2 inches long and the hub occupying practically the whole length. The hub is threaded on the inside, while the spigot is threaded on the outside. The full sized fitting will lengthen some 6 or 7 inches when put into place, so that it is a simple matter to insert this expansion joint, then screw up the spigot end until it connects with the length of soil pipe above sufficiently to make a secure connection by calking with oakum, then with lead a perfectly tight joint is easily made.

A FIRE did slight damage to the plumbing establishment of John Atkins, on Broadway, Watervliet, N. Y., last week.

EDWARD H. LITTLE, formerly manager of the Brooklyn Galvanizing & Mfg. Company, has severed his connection with that company and is no longer affiliated with them in any capacity whatsoever. We understand Mr. Little is going into the galvanizing business on his own account.

SPARKS from a locomotive set fire to the roof of the plant of the Stewart Heater Company on Norfolk avenue, Buffalo, N. Y. The damage done to the machinery and goods by the fire and by water in putting out the fire will amount to about $5000.

A FIRE broke out in the plumbing establishment of J. B. Snyder, 34-36 South avenue, Rochester, N. Y., last week, doing damage to the extent of $5000, which was fully covered by insurance. The fire also damaged the plant of the Genessee Plating Company to the extent of $3000, and Barr & Creelman, plumbers, sustained a loss of $4000, covered by insurance.

THE COMBINATION RUBBER & BELTING COMPANY, Bloomfield, N. J., manufacturers of Mechanical Rubber Goods and also sole manufacturers of the genuine Plumbers' Boss Washers, have notified the trade that J. A. Moody, who for the past 30 years has been connected with the New York Belting & Packing Company in an important position, is now in charge of their trade in Greater New York. Mr. Moody knows the rubber business thoroughly and is in a position to quote upon the exact goods which may be needed.

THOMPSON BROTHERS, Philadelphia, bid $6750 and secured the contract for installing a heating and ventilating plant at Nineteenth and Ludlow streets, in that city.

PLUMBING INSPECTOR AVERY of Holyoke, Mass., at the request of the Massachusetts Civil Service Commission, has forwarded affidavits as to his work for five years previous to his appointment and the names of his employers. This was done in response to the protest of plumbers who thought the appointment illegal. The Civil Service Commission have expressed satisfaction as to the affidavits and further steps against the appointment will have to be made through the Superior Court.

F. D. STOLZ, 115 Lake street, Chicago, reports a steadily increasing demand for the Hot Water Heaters recently brought out by him to be used in connection with Warm Air Furnaces. He finds a growing tendency to install combination heating in new buildings, to secure the advantage of ventilating with the positive action of the hot water heating apparatus. A great deal of repairing is also being done, in which combination heating is being installed to take the place of a single system previously used. The prospect for business this fall is remarkably bright. Mr. Stolz finds that buyers are making up their minds more quickly than usual, as people are prosperous and feel that they can spare the money to make desired improvements.

T. H. STEVENS, who is well known to the heating and plumbing trade throughout the country, is sending out an announcement that he has opened an office at 23 West Twenty-fourth street, New York, where he offers his services as plumbing and heating engineer. The announcement states that having had 20 years' experience as a practical man in heating and plumbing on some of the best buildings in New York and throughout the country, and also as inspector of plumbing and draftsman in the preparation of plans and specifications for plumbing and heating and in superintending construction, he offers his services to architects and others who require the services of a specialist in his line. Mr. Stevens has also acted as general superintendent of construction for the Building & Sanitary Construction Company, and he gives a long list of prominent plumbers, architects and plumbing goods houses as references.

FOR alleged violation of the regulations of the Board of Health Isaac T. Jones, plumber, of Hudson, Mass., was summoned to appear before Judge James W. McDonald of Marlboro July 27. This case was brought to test the legality of the board. Mr. Jones refused to comply with its rules and regulations on the grounds that it is illegally constituted, inasmuch as there is no physician on the board, and which is not in keeping with chapter 218, section 3, of the acts of 1894. In return, the Board of Health argues that at the annual spring election it was impossible to gain the consent of a physician to be a candidate for the office, and a layman was chosen.

AFTER being out on a strike for 12 weeks, the journeymen plumbers of San Antonio, Texas, have gone back to work under old conditions.

J. H. CASLER, Buffalo, N. Y., who is well known to the plumbing and heating trade throughout the country, is sending out a letter announcing that he has secured a private dwelling at 79 Norwood avenue, Buffalo, within ten minutes of the Pan-American Exposition grounds and in the finest residence district of the city, where he can accommodate 40 people. Doubtless many who will attend the exposition will be glad to find such accommodations, particularly as the rates are extremely moderate.

THE PIERCE, BUTLER & PIERCE MFG. COMPANY, Syracuse, N. Y., are sending to the trade a special mailing folder, red in color, devoted to the Pierce Silent Water Closet, No. 10, which is of the siphon type and shown

with a low down tank and the company's new vertical vent, which they claim is a distinct advance in local or seat ventilation, while the Closet embodies all the desirable features of the most modern goods. The house are also putting on the market a cast iron tank leg which will be found convenient by those who equip apartment houses with a hot water supply system. These Legs are a special casting designed to support a heavy weight. They can be used in sets of three or more for supporting hot water storage tanks used in connection with tank heaters.

The Burley Heater Company, Tyrone, Pa., report a large number of orders for their improved Heating Apparatus, which they consider proof that the new features presented in it have increased its popularity with the trade. They now manufacture every part in their own plant.

Joseph McWilliams & Co., Louisville, Ky., has been awarded the contract for the Steam Heat and Ventilating Apparatus for the New Orleans Custom House. The price is $33,870.

New Firms and Changes.

The National Steam Heating Company, with principal office in the Corporation Trust Company Building, 15 Exchange Place, Jersey City, N. J., have been incorporated with a capital stock of $130,000 by Robert C. Adams, Horace S. Gould and Evan J. Dudley. They will conduct a steam heating business.

Arrott Brothers & Co. have purchased 8½ acres of land at Colonia, near Monaca, Pa., on the Ohio River, and have applied for a permit for a corporation to be known as the United States Sanitary Mfg. Company, with a capital stock of $100,000. The plant will be large enough to employ 125 men at the outset and will be equipped with modern facilities for the manufacture of sanitary goods.

William P. Kirk, Bridgeport, Conn., formerly foreman for E. A. Creevey, has purchased Mr. Creevey's stock and fixtures and removed them to one of the stores in the Boys' Club Building, where he will carry on a general plumbing, heating and gas fitting business.

The Fred. D. Johnson Company of New York City have been organized with a capital of $10,000 by Fred. D. Johnson and W. L. Rushton of New York City and G. A. Pratt of Brooklyn, to manufacture steam heating apparatus.

Walter J. Braunsdorf and Edward A. Weaver, formerly with H. P. Blair & Co., at South Bend, Ind., have opened a plumbing shop at 221 South Michigan street, South Bend, under the firm name of Braunsdorf & Weaver.

The Louisville Gas Fixture Company, Louisville, Ky., have been incorporated with a capital stock of $10,000 by A. C. Montenegro, H. H. Bowen and others.

A. J. Small has leased the Cunningham store on East Main street, Waynesboro, Pa., and will engage in the plumbing and heating business.

The Sanitary Construction & Mfg. Company have been incorporated, with a capital of $50,000, at St. Paul, Minn., by George Kees, Raymond G. O'Malley and John A. Kees. The new company will manufacture and deal in Plumbers' and Gas Fitters' Supplies and carry on the business of plumbing and gas fitting.

The Loew Filter & Mfg. Company of New York City were recently organized with a capital stock of $50,000. The directors of the company are: C. H. Loew, Lakewood, Ohio; S. J. Cox, Cranford, N. J., and Herman Meyer, New York City.

The Cook Heating & Power Company are a new heating contracting house at 30 East Twentieth street, New York.

The Barron Heating & Power Company succeed the Barron & Cook Heating & Power Company at 26 Church street, New York.

The Union Engineering Company are a new heating contracting house at 95 Liberty street, New York. H. R. Stickney, who is well known to the heating trade, is their engineer.

E. W. Webster, Du Bois, Pa., who for the past seven years has been associated with the firm of Hibner, Hoover & Co., has purchased the plumbing and heating business of the company and enters into business for himself with bright prospects.

The Fruin & Walker Company, Chicago, Ill., were recently incorporated with a capital of $2500 for the purpose of manufacturing Pumps and Plumbers' Supplies. The incorporators of the company are J. L. Fruin, Michael Farrell and W. J. Walker.

The Coe Brass Company Buy the Chicago Brass Works.

Advices from Kenosha, Wis., state that the plant of the Chicago Brass Works has been transferred to the Coe Brass Company of Torrington, Conn., for a consideration of nearly $400,000. While the deal has been talked of for something like a year, the announcement of the sale came as a great surprise. The deal is an absolute sale, the Coe Brass Company having taken possession of not only the plant in Kenosha, but also of the brass store and office business of the company in Chicago. Many of the old men who are now with the brass works will remain, among the number who will have charge under the new management being F. L. Titsworth and J. K. Fletcher, the present superintendents of the plant.

With a capital stock of more than $3,000,000, the Coe Company have planned to make the Kenosha plant their Western outlet, and it is stated to be their purpose to control the entire trade west of the Mississippi River with brass from Kenosha. In order to do this elaborate arrangements are being considered for the enlargement of the plant.

The immediate demand is for room, and in order to fill this demand all the property now owned by the company will be covered with buildings. The present mill will remain, but it will be used largely for the manufacture of brass tubing, which has always been considered only a side issue by the former owners of the plant. A large mill will be built directly west of the present mill, and added to this another new building will be erected for the manufacture of copper.

Making Glue Size.

A writer in one of the furniture papers offers the following directions for making a good glue size: Put about 4 ounces of best white glue into a tin vessel and just cover with cold water; let this soak until so soft that you can press your finger through it, or for between two and three hours; then place the vessel into hot water and leave until the glue is perfectly dissolved. After that is accomplished put your thumb and first finger into the warm glue and pour in warm water slowly, stirring with your hand until you can feel one finger resist another. This is an indication that the glue is of the right consistency. When the fingers are first put in it will be impossible to feel them through the glue. This shows that it is too strong and needs the water as directed.

Action of Alcohol Upon Metals.

Dr. Malmejac, says *Science*, in his experiments used 95 per cent. alcohol, which left no residue on evaporation. The metals, copper, iron, tin, lead, zinc and galvanized iron, were corked up with alcohol in glass flasks and kept at ordinary temperatures for six months. The copper was entirely unacted upon, but in all the other flasks there was a deposit on the bottom and the metal was covered with a similar deposit. In the case of tin, lead, zinc and galvanized iron the deposit was white; that from iron was red, resembling iron rust. All of the liquids, except that in which the lead had been placed, filtered clear; the latter retained its milky appearance after repeated filterings through double filters. The clear filtrates from iron, lead, zinc and galvanized iron gave much residue on evaporation, while the residue from tin was hardly appreciable.

The Sheet and Tin Plate Strike.

Contrary to expectations entertained at the beginning of the week that the great strike in the union sheet, hoop and tin plate mills of the United States Steel Corporation would be brought to an early termination, the settlement of the dispute still seems nearly as far off as ever. The situation has reached a critical stage. The general Executive Committee of the Amalgamated Association has been in session in Pittsburgh since Tuesday considering the proposition made by J. P. Morgan to President Shaffer in New York last Saturday, when Mr. Shaffer, accompanied by John Williams, secretary of the Amalgamated Association, met with Mr. Morgan and C. M. Schwab, with the idea of arranging possible terms with the corporation, with a view to ending the strike.

The proposition made by Mr. Morgan to the association was to the effect that the United States Steel Corporation would agree to sign the scale for all union mills only, the nonunion mills to be run, as heretofore, without the scale being signed for them. In addition, it was stipulated that all union mills be open, and that nonunion men should be allowed to work in these mills without hindrance in any way from the Amalgamated Association. It is this last clause in the proposition that is regarded as the bone of contention which may prevent the settlement of the strike. It is not true that the United States Steel Corporation agreed to sign the scale for the McKeesport, Wellsville, Old Meadow and Scottdale mills, but, on the contrary, these plants are to be operated nonunion as heretofore.

The proposition made by Mr. Morgan to the Amalgamated was not by any means as favorable as the final proposition made by Warner Arms and others at the last conference held in Pittsburgh on Saturday night, July 13. Had it been as favorable it is pretty certain that it would have been accepted at once by the Amalgamated, as President Shaffer and his followers realize that the Amalgamated Association is doomed to certain defeat unless the strike is quickly settled. President Shaffer personally is understood to be in favor of accepting Mr. Morgan's proposition, but in this he is opposed by a majority of members in the Executive Committee.

The executive board of the Amalgamated Association, after meeting each day of this week and discussing the terms, is still in session at the time of writing, without any decision having been reached. On Thursday evening the following official statement was given out by that body:

We, the members of the General Executive Board of the Amalgamated Association, desire to deny emphatically the reports published expressive of disagreement among us. We are disposing of the work before the committee as fast as its importance will permit. No member has expressed any opinion or given any statement of the business, or of the attitude of other members. Nothing has been made public, neither will any report issue from us until a definite conclusion is reached. We are simply trying to reach a settlement which shall be honorable and satisfactory to all concerned.

While the chances for a settlement of the strike do not appear favorable at the moment, so much pressure is being brought to bear on both sides that, in the opinion of many, a compromise may yet be reached and the strike declared off. If the United States Steel Corporation would make as liberal an offer to the Amalgamated Association as was made in conference, the strike would probably be ended at once. If, on the other hand, the corporation refuse to modify Mr. Morgan's proposition, then a long and bitter fight seems likely. The strike may extend to some of the steel plants and blast furnaces, as well as the railways, entailing an immense amount of trouble and seriously affecting the business interests of the country. It is right to record that the strike, so far, has been conducted upon the most orderly lines. But should it extend it is a question whether such peaceful methods would continue. From every point of view, in the interest both of the manufacturers and the workmen, it is sincerely to be hoped that some method of settlement may speedily be arrived it.

A Large Stock of Sheets.

Joseph T. Ryerson & Son, 18 to 22 Milwaukee avenue, Chicago, are enjoying the fruits of their business sagacity and enterprise. They are among the largest steel merchants in the world, always carrying heavy stocks of plates, sheets, tubes, rivets and general boiler makers' supplies. This year they anticipated labor troubles in the sheet mills and greatly increased their purchases of black and galvanized sheets. They have thus placed themselves in excellent position not only to serve their old customers, but also to promptly supply the pressing necessities of a wider circle of buyers in the sheet trade, with whom business relations are extremely desirable. The stock sheet recently issued by this house presented a remarkable appearance for the times and conditions prevailing, showing heavy quantities of sheets of the standard sizes and gauges on hand in their warehouses and thus ready for immediate shipment.

Tin Plate Imports and Exports.

The official statement of imports and exports of merchandise into and from the United States during the fiscal year ended June 30, 1901, just issued, places the importations of tin plates during that period at 117,880,312 pounds, valued at $3,770,062, a falling off of about 30,000,000 pounds and $1,000,000 from the figures for the fiscal year 1900, which were 137,963,804 pounds, of a value of $4,799,796. In the fiscal year 1899, 108,484,826 pounds of tin plates were imported, the value of which was placed at $2,613,564.

The exports of tin plates from the United States in the fiscal year ended June 30, 1901, amounted to 1,367,405 pounds, valued at $66,550, as compared with 319,579 pounds, of a value of $19,062, in the preceding fiscal year, and 205,910 pounds, valued at $10,045, in the fiscal year 1899.

Fire Proof Sash and Window Frames.

The St. Paul Roofing, Cornice & Ornament Company, St. Paul, Minn., have issued a neat illustrated catalogue of sheet metal window frames, casings and sash. The company have designed these frames, casings and sash to meet the necessity for fire proof trimmings to be used in finishing fire proof buildings, and thus afford additional safeguards against fire. They manufacture two styles of fire proof windows, one named Perfection and the other Standard. The Perfection window is especially adapted for extra large windows where great strength is required, or when plate or other breakable glass is used, which can be replaced from the inside without removing the sash from the frame. The glass is held in place by a detachable metal stop, no bolts or screws being used. This sash can be hung with weights, or spring balances may be used for the smaller sizes. The Standard window is lighter than the Perfection, containing less material, and is especially adapted for wire glass windows for warehouses, &c., of ordinary sizes. The glass in this sash is inserted through an opening in the top rail, which has a detachable cap to close the opening after the glass has been set. The company also manufacture metal covered plain and paneled doors. The catalogue shows a large number of designs of stock metal moldings used in their interior trim and store sash, as well as corridor trim.

Tinsmiths and Sheet Metal workers generally will be interested in Callahan's Soldering Fluid, made by George Callahan & Co., 218 Front street, New York. It is claimed that this Fluid is noncorrosive and nonpoisonous. It is said to keep the soldering iron clean and is as well adapted for Galvanized Iron as for Tin and Copper. It is said to tin the soldering Copper instantly and that it is not necessary to file the Copper after it is forged. Owing to the fact that it does not cause rust or corrosion the Fluid is well adapted for use in repairing roofs.

UTILIZATION OF TIN SCRAP.

When first I turned my attention to the subject, says Prof. Joseph Richards, in the *Journal* of the Franklin Institute, I found that large quantities of tin scrap and galvanized iron were every day carted to the dumps. I found that the average coating on scrap tin, tin as tin on plate, was 3 per cent.; that the iron, if properly cleaned, could be used in the knobbling furnace and in the puddling furnace; that the use of galvanized iron was a necessary part of the process; and it looked so encouraging that we decided to build a plant to work it on a commercial scale.

I procured a half dozen of the larger beer casks used for storage, and which are about 6 feet in diameter and 6 feet deep. After removing the heads they were placed in the ground in a semicircle and a crane was rigged up that commanded all the tanks. In the first tank was charged hydrochloric acid; in the second, water; in the third, water with a little lime; in the fourth, water; and in the fifth, a solution of copper sulphate.

The plan of work was to fill a large wooden cage that would hold loosely about 200 pounds of the clippings. This was swung on the crane and placed in No. 1 tank. In ten minutes' time the crane was raised and the clippings examined to see if the tin was dissolved. If so, the cage was then lifted out of the acid tank and another cage filled with clippings took its place. The cleaned scrap was washed in the water tank No. 2, lifted up and down to well wash it, and then immersed in the lime tank, No. 3. This neutralized all the residual acid that was left in the pores of the iron. The untinned and limed scrap was then moved to water tank No. 4 for a final washing, then plunged for a moment, just enough to submerge it, in the copper sulphate solution, then immediately removed. The object of this treatment was to form an exceedingly thin film on the iron, to prevent the rusting of the clean iron, which is so sensitive when exposed to the air that it will almost immediately cover itself with rust. The cleaned scrap was compressed in a drop press into balls, and in this form was shipped to the iron works and worked into blooms for sheets, commanding a price of from $10 to $12 per ton.

After the process had been continued for some time all the acid in No. 1 tank would become neutralized and we would have a solution of chloride of tin.

The process of tin cleaning stopped here for a while. We then took a cage of galvanized iron scraps, filling the cage loosely. When the zinc came in contact with the tin solution the metallic zinc took the place of the tin, forming zinc chloride, and all the tin was precipitated as metallic tin, in a finely divided state. We worked this plant successfully for some time, recovering, when melted into ingots, about 600 pounds of tin from 10 tons of scrap. The recovered iron commanded $10 per ton and the zinc chloride $20 per barrel, for disinfectant purposes and for treating wood to make it fire proof.

We finally closed the works because of the objectionable vapors that annoyed our neighbors, with the intention of rebuilding on the swamps near Chester; but other things prevented us doing so. I yet think it is the best and most profitable means of utilizing this scrap, especially if electricity is used for the deposition of the tin.

H. J. Lawson's New Cornice Building.

In order to meet the growing demands of his cornice and sheet metal business H. J. Lawson has recently completed a new building on Auburn street, Manchester, N. H., where he will in future attend to the wants of his customers. For some time he was in business on Lowell street, but the old quarters becoming inadequate, he constructed this new building in accordance with plans prepared by himself and designed with the special view to the use to which it was to be put. The structure is three stories in hight, the front being finished in copper. The basement is used for a storeroom, the first floor for coppersmith work and the second floor carries the machinery for making small work. The building was erected according to what is known as "mill" construction, and on the side toward the adjoining building the windows are rendered as nearly as possible fire proof by using sheet metal frames and casings in combination with wire glass. The interior walls and ceilings are of steel.

Tin Mining in the Malay Peninsula.

A special mining commission of the London *Economist* reports as follows:

The lower half of the Malay Peninsula consists of the States of Perak, Selangor, Pahang, Negri Sembilan and Johore. The first four are known as the Federated Malay States—which are under the protection of Great Britain—and Johore will probably enter the Federation sooner or later. To the north of these are numerous other Malay States, quite unexplored as yet. These are nominally under Siamese influence, and are closed to European exploitation. The Federated Malay States, especially Perak and Selangor, contain by far the largest and richest tin mining fields known, and as they supply at present about four-sevenths of the world's output of tin their importance from the mining point of view can be easily imagined. These great tin deposits stretch from the north, through the independent Malay States, into Siam, and the province of Yunnan, in China, and south into Sumatra, Banca, Billiton and other of the Dutch Indies.

A rough estimate of the world's present yearly supply of tin may be stated as follows:

	Per annum. Tons.
Federated Malay States	45,000
Independent Malay States, Siam and Yunnan	4,000
Dutch Indies	15,000
Australia and Tasmania	3,000
Bolivia and Peru	4,000
Cornwall	4,000
Total	75,000

The question naturally arises, Is the output of tin going to increase? Will not the present high price before long have the effect of bringing many more producers into the market?

But tin is a metal which, relatively to copper, lead, silver and gold, is found in few countries, and I am inclined to think that the output, except in the Malay Peninsula itself, will not increase to any appreciable extent. In the Federated Malay States I can see no sign of waning in production, and when they are worked out, many years hence, the at present unexplored States in the north of the peninsula will doubtless continue to supply the world.

In the Federated States many of the richest patches of the alluvial tin bearing wash have already been worked out; but the lower grade areas, which now, owing to the higher price for tin, are as highly profitable to work as the richer ones used to be, appear to be of almost unlimited extent.

Every here and there you come upon one of these mines. From out of the big shallow holes thousands of Chinese coolies pour, carrying on their heads baskets of the tin bearing gravel, which they empty into the sluices, and as the endless stream passes and repasses, one's belief in the permanence of this industry is crystallized.

On every side, too, you see dense tropical forests. One glance will tell you that, as this land is cleared and prospected, thousands of acres of alluvial tin carrying areas will be exposed, the existence of which is not now known. But the Government is very wisely putting a stop to the habit of taking up only the richest areas. The poorer lands must be worked out first, especially with the present high price for tin, and in days to come the output can be regulated and the revenue assured.

Practically the whole of the tin areas are owned and worked by Chinese, and some of the wealthiest proprietors now estimate their fortunes in millions of dollars. Europeans have found, by costly experience, that the Chinese coolie, in tin mining, will give a fair day's work only to a Chinese master, and unless they can introduce hydraulic sluicing profitably their share in the tin mining industry will be an insignificant one.

CHARLES G. ZUG of Zug & Co., Limited, Sheet makers, of Pittsburgh, has sailed for Europe.

FLASHINGS.

THE AMERICAN ROLLING MILL COMPANY have resumed operations in their Sheet plant at Muskegon, Mich.

THE AMERICAN SHEET STEEL COMPANY have opened offices at Canton, Ohio, which will be a center for the management of their plants at Canton, Dresden, Niles, Dennison and New Philadelphia, Ohio.

THE factory of Hemp & Co., Tin and Sheet Metal manufaeturers, at 906-910 South Second street, St. Louis, Mo., was destroyed by fire last week.

W. S. BULLARD, Bridgeport, Conn., is putting on new roofing and repairing the old roofs at the plant of the Aeme Shear Company, in that city.

MOSES MALE, one of the pioneer Slate men of Amerieа, died recently at Pen Argyl, Pa. He was a native of Cornwall, England, and came to this eountry when the Pennsylvania Slate fields were first opened, nearly half a century ago.

A LOS ANGELES DISPATCH to the New York *Commercial* states that a number of prominent eitizens of that place have taken hold of a Tin mining claim that has been discovered in Orange County, Cal., on the south slope of the Temescal Mountains, and propose to develop it. It will be remembered that a British syndicate several years ago undertook to exploit Tin mines in the same region, but the venture was unsuccessful, owing, it is claimed, to poor management.

WARNER ARMS, second vice-president of the American Tin Plate Company, had a narrow escape from serious injury a few days ago, the carriage in which he was driving from the station at New Roehelle, N. Y., having been struck and smashed by an electric ear. Mr. Arms, his wife and daughter escaped with nothing beyond a severe shaking, but the coachman was seriously hurt.

HENRY WEYAND, Waterbury, Conn., has the contract for the plumbing and tinning on a six-tenement block which J. E. Carey is building on Williams street. Mr. Weyand is also getting out a large order of Skylights for the Hotchkiss Bros. Company of Torrington, Conn.

WE have received from the Berger Mfg. Company a reprint of an article published in the *Stoves and Hardware Reporter*, illustrating and describing the company's new branch at 19-21 South Main street, St. Louis, Mo. The opening of this establishment has provided the concern with greatly extended facilities for the transaetion of their business in the Southwest, which has increased materially of late under the management of S. Y. Buckman. The building is three stories high, with a basement, each floor having dimensions of 50 x 160 feet, giving a total floor area of 24,000 square feet. This large space affords materially increased capacity for carrying stocks of the company's various products in the line of Tin Plates, Sheet Iron, Roofers' and Tinners' Supplies, &c. An interesting feature connected with this building is the fact that it occupies the site of the house of Maxent, Laclede & Co., in which civil government was first established in St. Louis by Capt. Louis St. Ange De Bellerive in 1766. A handsome tablet giving this interesting historical information is affixed to the front of the building.

L'Echo des Mines of Paris reports that a French company have recently started operations under a concession to mine for Tin at Blond Mountain, near the town of Valry, in France. It is stated that Tin deposits have been found in the form of cassiterite in that region. The Ore is said to be widely distributed, but so far has been found only in small quantities.

W. J. BURTON & Co., 164 and 166 Larned street, West, Detroit, Mich., advise us that although Galvanized Sheets and Tin Plates have become very hard to find for prompt delivery, they are still able to fill all orders for their regular kinds and sizes by first freight from their stock in Detroit.

F. L. THRASHER, who conducted a Sheet Metal working business at 161 Dwight street, Springfield, Mass., died at his home last week.

A PRESS DISPATCH from Connellsville, Pa., states that George J. Humbert, formerly district manager of the American Tin Plate Company in that locality, is at the head of a movement to erect a ten-mill Tin Plate plant at South Connellsville, which will be run independently of the combination.

THE plant of the American Can Company, at Youngstown, Ohio, is to be removed to Cleveland, Ohio, where it will be operated in connection with the company's factory in that city. The removal of the Youngstown plant is a disappointment to that city, as it was expected that Youngstown would be one of the centers of production of Tin Cans under the consolidation.

F. E. BEHNER, Hartford, Conn., has taken an extensive contract for Tin roofing at the State Prison, at Wethersfield, Conn.

THE recent increase in the capital stock of the Youngstown Iron Sheet & Tube Company of Youngstown, Ohio, from $1,000,000 to $2,000,000, was in order to have money to erect an open hearth steel plant should the concern find, later on, that it is desirable to do so.

CUMMINGS BROS. of Holyoke, Mass., are doing the Slate roofing of the new residence of T. J. Green, Westfield, Mass., and L. E. Noble & Co. the plumbing and heating.

IMPORTS of Pig Tin into the United States in the fiscal year ended June 30, 1901, according to the official figures of the Treasury Bureau of Statistics, just issued, amounted to 73,091,890 pounds, valued at $19,805,551, an increase of about 3,000,000 pounds and $800,000 in value over the imports of the preceding fiscal year.

Metal Workers' School in Saxony.

E. Theophilus Liefeld, United States Consul at Freiburg, reports to the State Department that an exhibit of the work done by pupils of the Metal Workers' School at Rosswein has been recently held in Freibnrg, which showed the thoronghness of the instruction given in that institution. The school has an average of 60 to 70 students. These pupils are chiefly from Prussia and Saxony, but all sections of Germany are represented, and even Sweden and Austria. One of the conditions of admission is that the pupils should have had three years' practical experience. Many of the States of Germany are liberally aiding the school and granting free scholarships to worthy young men.

The school is provided with a technical library, reading and reference room, and has a large supply of scientific apparatus, electro motors, batteries, &c., and many practical models of buildings, machines, &c. Excursions are frequently made by the pupils to the large factories and mines of importance in the neighborhood. The course at the school lasts from one and one-half to two years, and embraces four departments—building, fine arts, machines and electrotechnics.

A great deal of attention is given to drawing. The student is taught to create, and, in order to stimulate the inventive faculties, the German Patent Office sends the institution, free of charge, copies of patents pertaining to mechanical, metal and electric apparatus. In addition to the special branches in metal work, &c., attention is also given to physics, chemistry, algebra, geometry, bookkeeping and German language lessons.

The tuition fee for the *semester*, or half year, is 100 marks ($23.80) for citizens of the German Empire and 200 marks ($47.60) for foreigners, and an additional fee of 25 marks (for foreigners 50 marks, or $11.90) for the use of apparatus, machines and material. The city of Rosswein has about 8000 inhabitants and is situated on the main railroad line between Leipzig and Dresden.

It is understood that negotiations have been going on for the consolidation of the rubber manufacturing business of the United States on a plan similar to that of the United States Steel Corporation. The concern will be composed of the larger crude rubber companies and the leading manufacturers of rubber goods. Charles R. Flint and other representatives of heavy interests in the rubber trade are said to be behind the deal.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

MAKING ROOF FLANGES.

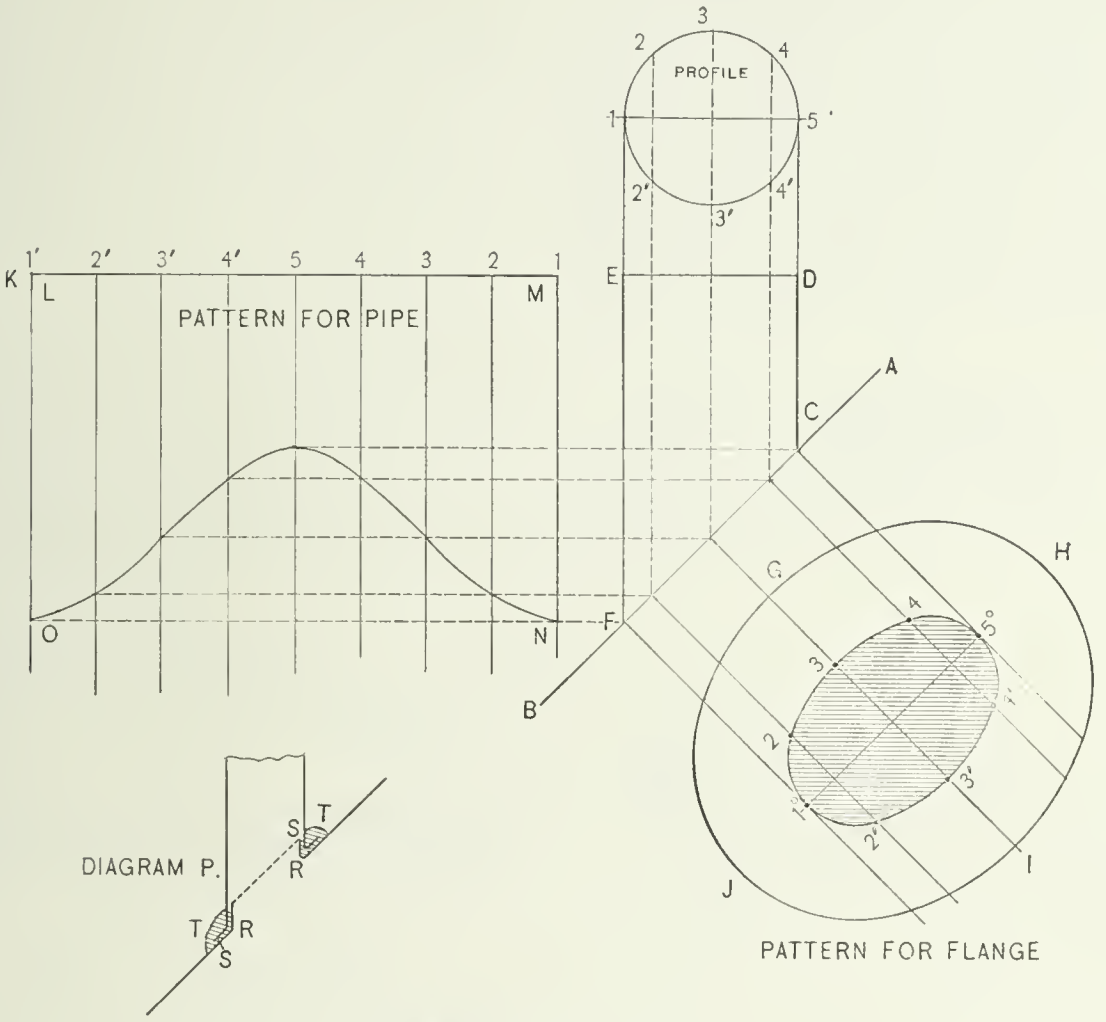
From T. W. Q., West Newton, Mass.—Will you please give me through the Letter Box Department directions for making roof flanges of copper adapted to different pitches, as indicated in the sketch herewith?

Answer.—In the accompanying illustration are shown the principles employed in obtaining a roof flange for a round pipe, the roof having an angle of 45 degrees. In this connection it may be proper to remark that no matter what may be the shape of the pipe, or what the pitch of the roof, the principles described are applicable to any case, whether the flanges are made of copper, zinc, galvanized iron, tin or sheet lead. Referring to the illustration, let A B represent the pitch of the roof and C D E F the round pipe fitting on it. In its proper position above the pipe place the profile, as shown, which divide into equal spaces, as indicated by the small figures 1 to 5. From these small figures, at right angles to 1 5, drop lines intersecting the roof line A B, as shown.

From these intersections and at right angles to A B draw lines indefinitely, as shown. Now parallel to A B draw the line 1° 5°.

Now, measuring in each instance from the line 1 5 in the profile, take the various distances to points 2, 3 and 4 or 2′, 3′ and 4′, and place them on similar numbered lines in the pattern, measuring in every instance from the line 1° 5°, thus obtaining points 2, 3 and 4 or 2′, 3′ and 4′. A line traced through these points, as shown by the shaded portion, will be the pattern for the opening to receive the pipe. The width of the flange, however, will vary according to the style of roof in use. If the roof is of metal, which allows soldering, a flange of 2 inches all around is sufficient, while if the roof is slate, tile or shingle an 8-inch flange is usually made. The flange is obtained by simply setting the dividers to the desired width and scribing around the opening, as is shown by G H I J.

For the pattern for the pipe mitering on the roof A B, extend the line D E of the pipe, as shown by D K, upon which place the stretchout of the profile of the pipe, as shown by the small figures on D K, at right angles to which and from these small figures draw lines indefinitely, as shown, which intersect with lines drawn at right angles to E F from intersections on A B. A line traced through intersections thus obtained, as shown by L M N O, will be the desired pattern, the seam being placed on E F to avoid leakage. In diagram P is shown the method of flanging the pipe and flange. R R shows an edge turned upward on the flange, while S S shows the edge turned outward on the pipe. The flange and pipe fit snugly and are then "sweated" with solder, as shown by T T, which completes the job.



Making Roof Flanges.

SMALL FLUES HINDER HEATING.

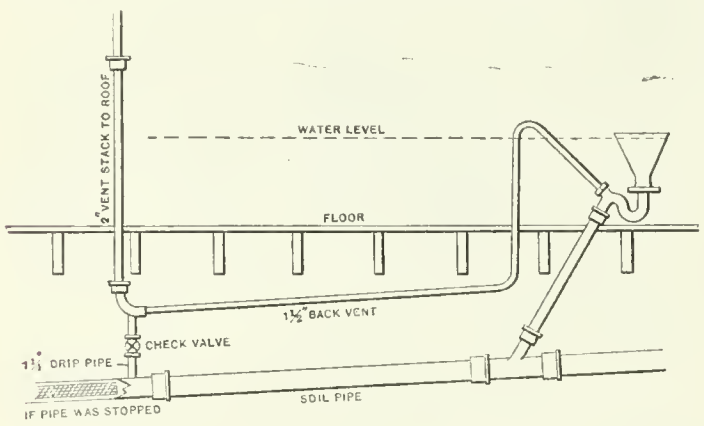
From J. T. B., Putnam, Conn.—With regard to the plans of the furnace job on which I asked assistance in *The Metal Worker* of July 13, I think there has been a mistake in marking the dining room and sitting room as being 18 x 20 x 8 feet instead of 13 x 20 x 8 feet, as the rooms actually are. You have selected the title, "Small Flues Hinder Heating," and I have based my calculations for the size of the flues on the provision of 1 square inch of area in the hot air pipe to 25 cubic feet of space for rooms on the first floor, and 1 square inch to 30 cubic feet of space for rooms on the second floor. The sitting room contains a chimney, which reduces the space 120 cubic feet, and the sewing room opens into the sitting room, only being divided from it by portieres, which are looped back, giving a total space of 2890 cubic feet in both rooms. My flue capacity is 128 square inches, or a proportion of 1 square inch to 23 cubic feet of space. The dining room, which is on the south side of the building with one wall exposed and the same conditions in regard to the chimney, has but 2080 cubic feet of space. The largest bedroom has 1260 cubic feet of space with

50 sqnare inches of area in the hot air fine, or a proportion of 1 square inch to 23 cubic feet. This room is on the north side of the house. I shonld be glad to be informed if my calculations are wrong and how to correct them.

Answer.—In selecting the title, "Small Flues Hinder Heating," reference was intended to be made only to the hot air stacks in the partition walls, which in all probability are not larger than 4 x 12 inches, and having an area of 48 inches, in which form the capacity for carrying the air wonld not compare at all favorably with the capacity of an 8-inch round pipe. The lack of air carrying capacity naturally would more seriously affect the heating of the first floor. The hot air pipes have been carried to the further side of the different rooms and there can be no doubt but shorter pipes, connected with floor registers in the dining and sitting rooms near the chimney, would make a very great improvement in the heating of the house. The views of the contributor presented in *The Metal Worker* of July 20 are worthy of carcful consideration, as they present valuable suggestions of a practical character. There is no error in the method of calculation adopted. With shorter pipes, connected to the floor registers, or with upright flues having a capacity equal to the hot air pipes, it is probable that the whole cause of trouble wonld have been avoided. The dimensions given on the plan presented in *The Metal Worker* of July 13 are 13 x 20 x 8 feet, and not 18 x 20 x 8 feet, as our correspondent has understood them.

A QUESTION FOR THE PLUMBING INSPECTOR.

From N. J., Webster, Mass.—Will *The Metal Worker* give me some assistance on the problem of back air ventilating shown in the accompanying sketch, which is a



A Question for the Plumbing Inspector.

little out of the ordinary? In this instance the back air pipe cannot be carried directly up in the usual way; it must be dropped down through the floor and then run off 10 feet in the cellar before it can be carried np through the roof. I propose to make the lowest place in the back air pipe at the point where it turns upward. At this point I would connect a 1¼-inch drip pipe and rnn it into the horizontal soil pipe, as shown. If the sewer pipe should be clogged up at the end, as shown, the water would find its level through the drip and fill up the back air pipe, which might clog it and render it useless. I propose to place a 1¼-inch check valve between the back air pipe and the sewer. Would this be proper, or is there a better way of doing the work where it is impossible to run the vent pipe directly npward?

Note.—It would seem that this is a question for the local plnmbing inspector and the Health Department. The plan should be brought to their attention, and if they will not permit the work to be done as shown, suggestions may be made that would be acceptable to them. We shall be glad to hear from our plumbing readers on this point. It is doubtful if a check valve on the drip pipe would be considered with favor by experienced plumbers. It would appear that the back air pipe from the closet should be the same size all the way to its connection with the soil pipe, if permitted. The proposed arrangement of vent pipe would cause the air rushing in to prevent siphonage to make many sharp turns. It is probable that under favorable conditions it might effect the desired result. On the other hand, it is doubtful if there would be such a circulation of air through such an arrangement of vent pipe as wonld dilute the air in the drainage system to the extent of destroying its corroding effect. Apparently, the arrangement of this pipe effectually disposes of condensation.

CLEANING AND TINNING OLD CANS.

From G. J. Z., Harrisburg, Pa.—Will you give me some information in regard to cleaning and tinning some old galvanized iron cans? These cans are used in making ice and they are more or less rusty. I have a great deal of bother in cleaning the cans, which takes a lot of time. My method is to clean them first with sulphuric acid cut in water, which takes most of the rust off. I then wash them with pure water, after which I apply muriatic acid cut with zinc. They are then put in a pan of melted solder. With a soldering iron I get the inside fairly well covered, but the hot solder seems to dry the acid on the outside, particularly on the bottom, and the solder will not stick. Can you give any way of making the solder take on the bottom of the cans without going all over the bottom with a soldering iron, which takes too much time? I have a big lot of cans to clean and retin and should be pleased to get any information that will aid me in retinning them.

Answer.—Ice cans that have been galvanized, as generally understood, are coated with zinc. Such cans should be treated to a melted zinc bath in the same manner as originally done. To tin them with solder, which is composed of tin and lead alloy, does not give any satisfactory results unless a large bath of melted solder is used, so that the cans can be immersed, when with a proper application of a solution of muriate of zinc and sal ammoniac the solder should readily flow on every part of the can. In trying to cover the surface which has been galvanized (zincked) the zinc thickens the solder and prevents its property of fluidity, which is the cause of the trouble. If the cans were originally tinned, then by adding sal ammoniac to the muriate of zinc the work will turn out better.

WHO MAKES THE MILAN VENTILATOR?

From J. S., Youngstown, Ohio.—Can you or any of your readers tell us who makes the Milan ventilator?

The Scarcity of Labor.

A scarcity of ordinary laborers prevails throughout the Northwest. Mannfacturers find great difficnlty in seenring a sufficient snpply of this class of workmen for the operation of factories. In some instances the scarcity has proved so great that efforts have been made to engage laborers in distant parts of the country. Last week trouble was threatened at Melrose Park, a Chicago snburb, by the divulgence of the plans of the Latrobe Steel & Coupler Company, who had arranged for a force of negro laborers from Alabama. The white citizens of the locality bitterly opposed the importation of the colored labor and threatened violence. The company concluded that it was wise not to cause trouble on this account, and abandoned the attempt. Other large employers of labor in Chicago and its vicinity wonld have been inclined to follow the example of the company if it had proved a successful experiment. The condition in the Northwest promises to become worse in this respect, as a strong demand now exists for harvest hands in the wheat fields of Minnesota and the Dakotas.

United States Consul Lyon of Hiogo, Japan, reports that an exposition will be held at Osaka from March 1 to July 1, 1903, which will include among other departments, mining, industrial, mechanical, sanitary and scientific exhibits. The objects to be exhibited will be those collected, produced or manufactured in the empire or by foreigners residing in Japan. The cost of the exposition will be defrayed by the imperial treasnry, but exhibitors will pay their own expenses.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin has fluctuated in price, closing at last week's figure; demand light.

Copper is dull and a trifle weaker.

Pig Lead is firm and quiet.

Spelter is very dull and without change in price.

Antimony is not active; prices unchanged.

Nickel remains strong and scarce.

Aluminum is in active demand at former prices.

Tin Plates continue scarce and high in price.

Sheets are also scarce, with prices strong for both Black and Galvanized.

Old Metals are dull and weak.

Foundry Pig Iron is more quiet and prices are inclined to waver.

Hardware is moving in excellent volume for the season and prices are generally firm.

Plumbers' Supplies are moving in fair volume, with prices firm and scarcity in some lines of goods.

Plumbers' Brass Work was advanced 5 per cent. July 29.

Steel Clad Bathtubs are scarce and strong in price.

Plumbers' Wood Work manufacturers are behind in deliveries; prices continue firm.

Wire Nails are active at unchanged prices.

Cut Nails are without change and in fair demand.

Wire is still in heavy demand, with prices strong.

Linseed Oil is firm at the advance.

METAL MARKET.

NEW YORK, August 2, 1901.

Pig Tin.—In the early part of the week the holders of Tin having secured all the spot metal available advanced prices about ½c. The demand, however, was very light throughout the week. The monthly statistics making an unfavorable showing, prices again declined, closing at about the same figures ruling at the date of our last report. The London market, at the close, was reported to be weak with little or no business doing. Straits Pig in small lots is quoted by jobbers at 28c. to 28¼c. per lb. The monthly statistics show that total shipments from the Straits in July were about the same as for that month last year. The arrivals at Atlantic ports during the month were moderate, being 1756 tons. Stocks at Atlantic ports on July 31 were placed at 2254 tons, and 2635 tons were afloat at that date. The total visible supply for Europe and the United States on July 31, as compiled by the New York Metal Exchange, was 1761 tons, an increase of 2295 tons over the figures of June 30.

Copper.—Following a sharp decline in the London market the market for Copper on this side was somewhat inclined to softness, and there were rumors that one of the larger producing interests was selling Lake Ingot at a price ½c. a lb. below the rates which have been quoted for some months past. It was difficult to find a substantiation of this report, however. Quotations for small lots were unchanged at 17¼c. to 17½c. per lb. for Lake Ingot, and 16¾c. to 17c. for Casting Copper. The domestic demand continues light and the export trade is also of very small proportions. Exports during July amounted to 7563 tons, against 9428 tons in June. The total exports from January 1 to July 1 inclusive were 39,295 tons less than for the corresponding period of last year.

Sheet Copper.—The manufacturers of Sheet Copper report a continued active demand, which keeps good pace with the production. Prices are firm and without change, small lots of Sheet Copper from store being quoted on the basis of 21c. per lb.

Pig Lead.—This metal is unchanged and without interesting developments, selling at the figures ruling for some months past. Small lots of American Pig are quoted at 4.60c. to 4.62½c. per lb. The demand is of moderate proportions and without special feature. St. Louis advices report a good run of orders for Pig Lead in that market, mostly calling for carload lots, with prices showing no change.

Spelter.—The market is extremely dull at unchanged figures, there being little or no demand from any quarter. Small lots of good Western brands are quoted at 4.45c. to 4.50c. per lb. in New York. Advices from St. Louis state that rumors are again heard of a Spelter combination. A meeting of those interested was held in that city on the 30th ult., but nothing definite was accomplished. The demand for Spelter in St. Louis is described as fairly active at former prices.

Sheet Zinc.—The demand for Sheet Zinc is of about the usual proportions. Jobbers quote 600-lb. cask lots at 6¾c. per lb. and smaller quantities at 7¼c.

Antimony.—Business is not active and prices remain unchanged. Cookson's, in small parcels, is quoted at 10½c. to 11c. per lb. and Hallett's at 8¾c. to 9½c.

Nickel—Is firm and unchanged. Small lots are quoted nominally at 60c. to 65c. per lb.

Aluminum.—A good demand at former prices is reported for this metal. No. 1 Ingot, guaranteed 99 per cent. pure, in small lots, is quoted at 37c. per lb. and 100-lb. lots 35c.

Tin Plates.—As compared with the rush of buyers last week, there was little doing in the Tin Plate market this week, partly because consumers were hoping that the strike situation would right itself and the mill wheels again begin to turn. This expectation, however, has not been justified so far by the event. Another potent reason for the falling off in the amount of business is the fact that neither manufacturers nor jobbers have much to sell in the line of Tin Plates. The market is practically bare of the more popular sizes of Coke Tins, and some of the consumers are beginning to feel the pinch of the scarcity very sharply. This is particularly the case with the Maine sardine canners, who have been caught very short of stocks and who are unable to obtain a sufficient supply of light weight Plates for their purpose. As their season is now on and is a comparatively short one, and they are forced to put up their supplies of fish without delay, it is feared they will undergo serious loss through lack of material wherewith to make their cans. In a similar way some of the fruit and vegetable growers will suffer great inconvenience, and it is likely that a number of the canning factories will have to shut down, entailing loss to both packers and growers. The available stocks of Tin Plates in second hands are rapidly becoming depleted, and orders are being turned down right and left by jobbers. Quotations are entirely nominal, holders who have anything to spare being able to obtain almost any price within reason that they choose to ask. The situation is becoming grave. Some orders for Tin Plates have been placed abroad, but buyers on this side are not inclined to invest very heavily in the foreign product, on account of the expense of importation and also because there are practically no spot stocks to be picked up in Wales. And no shipments of any volume could be expected from the other side much before the end of September, long before which time it is hoped that the domestic mills will again be in operation. It is only those consumers who must have Plates at any cost who are willing to buy the foreign product at the present high prices. The Tin Plate jobbers are consequently on the horns of a dilemma. While they do not care to import anything beyond what they can dispose of at once, on the other hand they cannot expect anything from the

American Tiu Plate Company for some mouths to come, even if the mills are started at an early date. It is almost useless to quote priees under the circumstances, as there are practically no current market rates, but it may be generally said that Bessemer Coke Plates, IC, 14 x 20, delivered at New York and Eastern points, cannot be had much under $6 to $6.25 a box.

Sheets.—The Sheet trade is now practically in the hands of the jobbers, as the mills iu operation are all sold up for three or four months to come and have nothing whatever to offer. The demand is of the same urgent character as for several months past and orders to almost any extent could be booked lf deliveries could be made. But, as stated above, the mills are so full of buslness that they can take on no more. Spot Black Sheets are impossible to obtain and jobbers who have stocks available are getting a handsome premium over the rates quoted by the American Sheet Steel Company. Galvanized Sheets are in somewhat better supply than Black. Shipments are coming in slowly from the mills and are snapped up as soon as they appear ou the market. New York jobbers are quoting No. 27 Oue Pass Cold Rolled Soft Steel Sheets at about 4.10c. to 4.15c., and Galvanized Sheets at 62½ and 5 per cent. to 65 per cent. off the llst.

Chicago advlces are as follows: Shipments from mills have beeu so heavily cut down that consumers are drawing largely from the stocks of the local jobbers. These stocks are rapidly disappearing. Some jobbers who usually carry large stocks now have only a few odd sizes in their warehouses. The fear that they may not be able to secure material for use when needed is causing many consumers having contracts for future delivery to request jobbers to make shlpments now, for which they will pay curreut prices. Quotations have been advaneed and the minimum now asked by any of the jobbing houses is 3.70c. for No. 27 Black, while other houses quote 3.80c., and some sellers are holding for 4.10c. No. 20 is quoted in the same way from 3.40c. up to 3.70c. Tin Plates are getting very searce and jobbers have advanced their base priees 25c. per box durlng the week.

Old Metals.—Business is qulet and prices iuclined to irregularity. Dealers are payiug about the following for moderate sized lots, delivered at New York or corresponding poiuts:

Heavy Copper	per lb. 14¾c.
Light and Tinned Copper	per lb. 13¼c.
Heavy Brass	per lb. 10 c.
Light Brass	per lb. 8 c.
Lead	per lb. 4 c.
Tea Lead	per lb. 3½c.
Zinc	per lb. 2¾c.
No. 1 Pewter	per lb. 18½c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	$6.00
Wrought Iron Scrap, per gross ton	$10.50 to 11.00
Heavy Cast Scrap, per gross ton	10.00 to 10.25
Stove Plate Scrap, per gross ton	7.00 to 7.50
Burnt Iron, per gross ton	5.00 to 5.50

THE PIG IRON MARKET.

New York.—The market continues very quiet, purchasing being very limited. The pressure to sell has been renewed in some quarters and is believed to be connected with the prospect of an enlarged productiou in districts tributary to this market. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $14.50 to $15; No. 2 Foundry, $14 to $14.50; No. 1 Soft, $14.50 to $15; No. 2 Soft, $14 to $14.50; No. 3 Foundry, $13.25 to $13.50; No. 4 Foundry, $12.75 to $13.25.

Chicago.—The volume of business now being transacted is much under the normal even for midsummer. Only one sale of 1000 tons of Southern Foundry Iron has been made, and a few trausaetions of from 50 to 200 tons are reported, the total of sales being very small. The foundrymen are awaiting the settlement of the various strikes. The leading Southern furnaee companies are marking up the prices of No. 1 Foundry Pig. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon	14.90 to 15.15
Southern Coke, No. 1	14.65 to 14.90
Southern Coke, No. 2	14.15 to 14.40
Southern Coke, No. 3	13.65 to 13.90
Southern Coke, No. 1 Soft	14.65 to 14.90
Southern Coke, No. 2 Soft	14.15 to 14.40

Philadelphia.—There is quite a difference of opinion as regards the Pig Iron situation. Locally furnaces are well sold up, and with light stocks on hand makers of Pig Irou are disposed to hold prices pretty steady. Outside lots, however, are offered at low figures, and as a means of self protection some of the nearby furnaces have met the market, but apart from a few special cases there is no pressure for business at less than $15 for No. 2 X and $14.50 for No. 2 Plain, some in fact claim to be doing better than these figures. Under the circumstances uniformity is hardly possible, as the conditions vary iu almost each individual case. It cannot be said that the market is positively weak, but it is likely enough to turn that way unless some stimulation is applied within the next two or three weeks. The range of prices to-day is about as follows for city and nearby deliveries: No. 1 X Foundry, $15 to $16; No. 2 X Foundry, $15 to $15.25, and No. 2 Plain, $14.25 to $14.75.

Cincinnati.—Taking all the adverse conditions into consideration, one would naturally expect to find a pretty dull situation in the Pig Iron market. The summer season, the unusual heat and the question of strikes all operate against activity, yet in spite of all this season is considerably better than the average summer. There is a pretty fair demand for Foundry Iron of all grades. Occasionally a lot of 1000 tons is landed, but the general run is for 200-ton orders, and from that down to a single car, in the aggregate a reasonably fair tonnage. Prices, however, appear weak. The minimum figures given herewith have been shaded a fraction, so report says. There is no change in sight, though it is not at all unlikely that the market will assume a stronger appearance. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$13.50 to $13.75
Southern Coke, No. 2	13.00 to 13.25
Southern Coke, No. 3	12.25 to 12.75
Southern Coke, No. 4	11.75 to 12.00
Southern Coke, No. 1 Soft	13.50 to 13.75
Southern Coke, No. 2 Soft	13.00 to 13.25
Southern Coke, Gray Forge	11.75 to 12.00
Southern Coke, Mottled	11.75 to 12.00
Ohio Silvery, No. 1	15.50 to 16.00
Ohio Silvery, No. 2	14.50 to 15.00
Lake Superior Coke, No. 1	14.50 to 15.00
Lake Superior Coke, No. 2	14.00 to 14.50
Lake Superior Coke, No. 3	13.50 to 14.00

St. Louis.—The market is in a rather quiet condition, with no indication of any immediate improvement. Leading producers are maintaining prices, expressing the belief that lower quotations will not increase consumption. A few outside makers are shading prices, so that the markets, so far as prices are eoncerned, are somewhat unsettled. The market as a whole seems to be in a waiting condition, and the next few weeks will determine what course prices are likely to take. We quote as follows for eash, f.o.b. cars St. Louis:

Southern, No. 1 Foundry	$14.25 to $14.50
Southern, No. 2 Foundry	13.50 to 13.75
Southern, No. 3 Foundry	13.00 to 13.25
Southern, No. 4 Foundry	12.50 to 12.75
No. 1 Soft	14.25 to 14.50
No. 2 Soft	13.50 to 13.75

CHICAGO REPORT.

Scrap Iron and Steel.—Cast and Wrought Scrap are quiet. Borings and Gas Pipe are a trifle dearer, because of scarcity. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.	
Country Wrought Scrap	$10.50 to	$11.00
Machinery Cast	10.00 to	....
Malleable Cast	10.00 to	11.00
Stove Plate (free from burnt)	7.00 to	7.50
Burnt Iron and Grate Bars	5.50 to	6.00
Sheet Iron and Hoops	6.00 to	7.00
Plow Steel	9.00 to	10.00
Breaking Stock	9.00 to	9.50
No. 2, such as Shovels, Hoes, &e	.... to	7.00
Old Boilers—whole (Iron)	.... to	7.00
Old Boilers (Iron) cut in single Sheets and Rings	9.50 to	10.00
Old Gas Pipe and Boiler Tubes	10.00 to	10.50

Cast Borings	4.00 to	4.25
Turnings	8.50 to	9.00
Horseshoes	11.00 to	....

Old Metals.—Business is dull. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	14½c.
Copper Bottoms	13¼c.
Copper Clips	14 c.
Red Brass	13¼c.
Yellow Brass	10 c.
Red Brass Borings	11½c.
Yellow Brass Borings	9 c.
Light Brass	7¾c.
Pipe Lead	4 c.
Tea Lead	3½c.
Zinc	2¾c.
Pewter, No. 1	19 c.
Pewter, No. 2	10 c.

Old Rubber.—Conditions are unchanged. Buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$23.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7¾c.
Rubber Car Springs	....	4¾c.
Inside Bicycle Tubing	....	21 c.
Outside Tubing	....	7¼c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—The demand will now be light for a week or two. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis	5.75	6.00
St. Louis	6.25	6.50
Kansas City, Mo	8.25	8.50

A discount of 10c. from these figures is allowed on all Coal ordered to be shipped in August.

THE HARDWARE TRADE.

Since our last report nothing has occurred to disturb the satisfactory and promising condition then existing. On the other hand, the situation has perceptibly improved in some of its main features. Chief among these is the termination of the drought which was working so much injury, especially to the corn crop. The coming of bountiful rains in the sections where they were most needed has done a great deal to relieve apprehension, and probably to secure throughout the country at large an average crop. The hope of a settlement of the strike of the iron workers is also having an excellent effect on the general feeling. The reaching of an understanding and the resumption of work in the mills affected by the strike would lessen the fear of a shortage of material, which has begun to be felt quite seriously in some directions, and at the same time tend to stimulate business. Already in several lines the influence of the strike is felt in advanced prices, principally for Sheets, Tin Plates and related goods, but the influence of the stoppage of the mills has also been felt in other branches of the trade.

The month of July has been quite an exceptional one in the volume of business transacted in Hardware and related trades. There has been a good deal of purchasing in liberal quantities, but not in a speculative way. Many merchants have recognized the danger of difficulty in getting orders filled and have bought so as to cover their requirements in good season. The volume of business, too, which the jobbers have been doing has been such as to keep their stocks pretty low, and it is generally conceded that the fall trade will open with a moderate supply of goods in the warehouses of the manufacturers, the bins of the jobbers and the shelves of the retailers.

Prices meanwhile are, as a rule, very steady, and even strong. Manufacturers are cautious about accepting orders in view of possible difficulty in executing them promptly on account of the scarcity of material or the overtaxing of their facilities. There is a good deal of revising of quotations, but values, on the whole, are substantially unchanged. There is some complaint about collections, as not unusually happens at this season, but the general situation is regarded as eminently satisfactory and sound. All classes of the trade are looking forward to a good business during the remainder of the year.

NOTES ON PRICES.

Plumbers' Supplies.—While business in Plumbers' and Steam Fitters' Supplies in this market is still rather quiet, so far as the city trade is concerned, the out of town demand keeps up in surprisingly good volume. Some of the leading jobbing houses state that they did the largest July trade in their history, and the outlook is generally regarded as favorable for the continuance of a large and steady run of business during the coming month. A goodly amount of repairs and overhauling is now in hand, which will call for a considerable volume of goods. Prices in general are very strong, with indications of further advances in certain lines. A feature of the trade is the pronounced scarcity which exists in a number of lines, especially Enameled Bathtubs and other Sanitary Enameled Ware, Sanitary Earthen Ware and certain sizes of Wrought Iron Pipe, in all of which lines of goods the manufacturers are away behind in their deliveries.

Plumbers' Brass Work.—The manufacturers of Plumbers' Brass Work who are members of the association withdrew prices on all kinds of Plumbers' Brass Work on Monday, July 29. A meeting was held on that date and prices were advanced 5 per cent. over those adopted on May 7. The goods affected include Stops, Stop and Waste Cocks and Bibbs of the Ground Key pattern, Compression Work of all kinds and sizes, all kinds of Fuller Work, and, in fact, all Brass Goods for water. It is said that the advance was brought about by the large demand for Brass Work for immediate shipment. An active demand has prevailed for several months past, and is likely to continue for the next three months. The condition of the Brass market has not been so favorable, from the manufacturers' point of view, in the past two and a half or three years as it is at the present time. Orders on hand with the manufacturers are said to be in such volume that it will be impossible for them to clean up their order books before the end of the year. All of the manufacturers have been complaining that for the past few years no money has been made in their business, and there seems to be a unanimity of opinion among the members of the association that they should insist upon having a fair profit on their product. There is a better feeling of confidence among the manufacturers at the present time than there was a short while ago. From what we can learn the advance made on last Monday will be the only one which will be insisted upon this year. One thing is pretty certain, and that is that prices on this class of goods will not be any lower for six months at least. The possibility is that if the Copper market changes and shows an advance Brass Work will show a like advance.

United States Radiator Company's List and Discounts.—United States Radiator Company, Dunkirk, N. Y., are issuing their quotations in the form shown below. Apart from the interest of the prices named, the way in which the convenience of the trade is served will be observed, the special feature of the price sheet being that in addition to showing the discount and the list price, the company have also figured out the net cost of Radiation per foot at the discount named and have printed it over the list. Thus, the list being 41 cents and the discount 55 and 2½ per cent., those using the list can see at a glance that the net is 17.99 cents, or practically 18 cents. This effort to simplify the work of the fitters will be appreciated. The discount sheet is as follows:

DIRECT RADIATION.

List Prices per Square Foot Heating Surface.

Hight in Inches.	45	44	38	32	26	23	20	18	Discount.
Chautauqua Two Column, Plain, Steam	.1799 .41		.1843 .42	.2018 .46	.2150 .49		.25 .57		55-2½
Chautauqua Two Column, Plain, Water	.1845 .41		.1890 .42	.207 .46	.2205 .49		.2565 .57		55
Chautauqua Two Column, Ornamental, Steam	.1799 .41		.1843 .42	.2018 .46	.2150 .49		.25 .57		55-2½
Chautauqua Two Column, Ornamental, Water	.1845 .41		.1890 .42	.207 .46	.2205 .49		.2565 .57		55
Triton One Column, Steam			.2331 .42	.2553 .46	.272 .49		.3163 .57		40-7½
Triton One Column, Water			.2394 .42	.2632 .46	.2793 .49		.3249 .57		40-5
Triton Two Column, Steam		.1845 .41	.1890 .42	.207 .46	.2205 .49		.2565 .57		55
Triton Two Column, Water		.1896 .41	.1943 .42	.2127 .46	.2266 .49		.2636 .57		50-7½
Triton Three Column, Steam		.1799 .41	.1843 .42	.2018 .46	.2150 .49	.2325 .58	.25 .57	.2545 .58	55-2½
Triton Three Column, Water		.1845 .41	.1890 .42	.207 .46	.2205 .49	.2385 .53	.2565 .57	.2610 .58	55
Triton Four Column, Steam			.1890 .42						55
Triton Four Column, Water		.1845 .41	.1890 .42	.207 .46	.2205 .49	.2385 .53	.2565 .57	.2610 .58	55

The figures printed above the list prices, are the net prices, per foot, in cents, computed at these discounts.

INDIRECT RADIATION.	List Price.	Discount.
Perfect Pin, Steam or Water, 12 sq. feet per section	$3.24 per section. $1.95	40

An additional charge of one cent per foot will be made for assembling Indirect Radiation

SPECIALTIES.

Steam.	Water.	Discount.
Circular. 5[illegible] cents per section Curved .58 cents per section Corner. $3.80 per radiator Fitted for Marble Top. 85 cents per radiator Window .16 cents per section Stairway .34 cents per section Solid High Legs, 6 to 10 inches .53 cents per section	Circular .92 cents per section Curved .92 cents per section Corner $4.75 per radiator Fitted for Marble Top .85 cents per radiator Window .32 cents per section Cast Screen Tops (steam or water) 15 cents per section	25-5

OVENS.	List Price.	Discount.
Dining Room Ovens, made for Chautauqua and Triton Two Column Radiators only Size—Length of oven, 2 ft. 6½ in. Hight of oven, 17½ in. Depth of oven, 12½ in. Projection from rear face of radiation, 5½ in.	$35.00 per oven.	40-5

The above prices for specialties to be added to regular prices quoted for direct radiators.
All the above prices are F. O. B. our works Dunkirk, N. Y., less the carload rate of freight, not exceeding 15 cents per hundred pounds.
TERMS:—60 days or 1 per cent. Discount for cash within 15 days from date of invoice.
Our goods are guaranteed only to the extent of furnishing new sections for any found defective in manufacture.

Steel Clad Bathtubs.—The Steel Clad Bathtub market has been entirely cleaned up. None of the manufacturers of this class of goods carry any stock on hand. All of the Tubs that they are making are being shipped just as fast as they are finished. In fact, the scarcity of Steel Sheets is so marked that one of the Western manufacturers has issued a notice in which he announces that he has received two carloads of Steel Sheets for use in the manufacture of his Bathtubs, and that he is now in shape to execute orders promptly, and also that the delays heretofore experienced, owing to the lack of material, will be obviated while the present stock of Steel Sheets remains on hand. This notice is a good index of the condition of the market. Steel Clad Tubs are higher in price to-day than they have been at any time within the past three years, and with the resumption of work at the Steel mills a further advance in these goods seems to be unlikely.

Plumbers' Wood Work.—The supply of Plumbers' Wood Work is very far short of the demand. All of the wood working plants are three and four months behind with their orders, and orders which have been placed with the plants for carload shipments are being sent out in small, piecemeal shipments. This is done in order to help out the jobbers the best way possible. The demand for Wood Work comes chiefly from the out of town trade. While the city trade is picking up, it is still much behind what it should be at this season of the year. This is the season when many of the city folk are away from their homes, and when the mechanic takes possession of their houses in order to overhaul and renovate them, and at this time the demand from the city trade for all classes of Plumbing Material is generally very brisk. For some unexplained reason the season is, this year, several weeks behind.

Wire Nails.—The demand for Wire Nails in New York keeps up to former proportions. This somewhat exceeds expectations. Small lots from store are quoted at $2.60 per keg.

Cut Nails.—The Cut Nail market in New York is unchanged, small lots from store ruling at $2.18 to $2.25 per keg.

Wire.—The mills are having a heavy demand for Plain Wire from jobbers, and the latter report a good business from small buyers. The market is very strong. Plain Wire in small lots being quoted at 2.60 cents per pound and Galvanized at 3 cents.

Window Glass.—The combines have contemplated starting their Window Glass factories on September 15. It is now intimated that the time for beginning work is likely to depend largely upon the demand for Glass dur-

ing August. If it does not improve the starting of the factories may be deferred to give the jobbers an opportunity to dispose of stocks in hand. Jobbers' quotations for domestic Glass are unchanged, less than car lots from store being quoted at discount 80 and 20 per cent.

Linseed Oil.—The market remains firm, but purchases are usually limited to immediate requirements. The new crop of Flaxseed from the West and Southwest will probably be in the market about the middle of the month. This, however, is likely to be but a small portion of the entire crop and will supply the trade with Linseed Oil but for a limited time. The Northwestern crop of seed, it is understood, will not be in crushers' hands before the middle or last of November. It is estimated that the new crop of seed will be sufficient to supply domestic requirements. Plans are said to be on foot to further consolidate the Linseed Oil and White Lead interests. City Raw in lots of less than 5 barrels are quoted at 83 to 84 cents per gallon, Boiled Oil being 2 cents per gallon advance on Raw.

Old Rubber.—The market is quiet and prices are rather soft. Dealers in New York and vicinity are paying about the following figures:

Car Springs, ton lots, per lb	4¾c.
Rubber Shoes, less than carloads, per lb	7¾c.
White Wringer Rolls, per lb	7¾c.
Inside Bicycle Tubing, per lb	21 c.
Outside Tubing, per lb	7 c.

The Mackie Sheet Steel Tubing Works.

The Mackie Steel Tube Mfg. Company, Hammond, Ind., have built up within a very short period an important business in the manufacture of sheet steel tubing. It is hardly two years since they began to make brazed tubing on a small scale in Chicago. Their process proving a commercial as well as a mechanical success, they removed to Hammond last year, taking possession of a plant built for other purposes but adapted for the manufacture of their product. The property comprises 2 acres, which is well covered by buildings. At present the company are working into tubing over 25 tons of sheet steel daily, making a product ranging from ¼ inch to 2 inches in diameter. The tubing is made in any length, and of sheets of any thickness, from No. 12 to No. 30, as may be required. The company make both brazed and butted tubing, either plain or nickel plated, for umbrella manufacturers, bedstead makers, stove and range makers, implement manufacturers, &c.

The manufacture of brazed tubing of heavy gauge and in long lengths has been found an extremely difficult operation. In the halcyon days of the bicycle trade quite a number of establishments were successful in turning out short lengths of brazed tubing, made of thin sheets. This, however, was a very different matter from using No. 12 to 16 sheets and making tubing 15 feet or more in length. This is regularly done by the Mackie Steel Tube Mfg. Company, and they claim to be the only manufacturers in the country who have made a success of it. Their plant is so well equipped with special machinery that they are not only able to turn out any size or length desired, but can furnish tubing bent in any form. Metal bedsteads are now made in highly ornamental designs, with numerous scrolls and bends. The company receive sketches from the bedstead manufacturers and furnish tubing, accurately duplicating the pattern, without buckling or flattening.

For a great deal of work, as, for instance, metal bedsteads, sheet metal tubing has been found preferable to merchant pipe turned out by the makers of wrought pipe for gas and water. The latter is not only much heavier than necessary for such purposes, but the surface is rough, requiring much work in polishing for nickeling or enameling. Sheet steel, on the other hand, has a smooth and even a polished surface to begin with, and any gauge desired can be selected for the tubing, so as to make it quite light or fairly heavy. The brazing done by this company is accomplished by a process peculiar to themselves, making an invisible seam and a joint which is claimed to be permanent.

They have also their own process for beveling the edges of strips of sheet steel by which they are enabled to produce butted tubing with practically a lap joint.

The company are large manufacturers of umbrella rods, which are made of No. 22 sheet steel. The slots for the catches are stamped into the sheet, and a piece of steel wire is inserted for the tip, while it is being formed into a tube. Of these rods the company have a capacity of 780 dozen per day, enameled or nickeled, ready for use by the umbrella manufacturer.

Another product of these works is the Mackie bed caster, specially designed for metal bedsteads, made with a cork socket to cling to the inside of the tubular bed post.

The company have found the demand for their products running so much in excess of the capacity of their plant that they are considering its enlargement. The officers are as follows: Charles Mackie, president; Peter Thorsen, vice-president and superintendent; David G. Branckman, second vice-president; John A. Armbruster, secretary and treasurer. They maintain a city office and sample room at 166 Lake street, Chicago.

The North Star State Mfg. Company have been incorporated at Minneapolis, Minn., with a capital stock of $30,000, by George B. Leonard, H. A. Feltus and J. F. Gillick, for the purpose of manufacturing Self Heating Sad Irons.

CONTENTS.

	Page.
Editorials—	
Scarcity of Tin Plates	35
Midsummer in the Stove Trade	35
The Opportunity of Cast Iron Heaters	35
Maintain Prices	36
Business Sketches in America	37
The J. C. Bartlett Company	37
Pennsylvania Gas Furnace	37
The Michigan Stove Company's Exhibit at the Buffalo Exposition. Illustrated	38
The Regal Oak	38
Norman Steel Range	39
Folding Camp Stove. Illustrated	39
New Defiance Range	39
Gold Coin Stoves and Ranges	39
Jewel Gas Heaters and Radiators	40
The S Stove and Ranges	40
Odd Plates	40
Michigan Retail Hardware Dealers' Association	41
Gurney Refrigerator Company	41
Samuel D. Martin	42
The Modern Lemon Squeezer. Illustrated	42
The Sturges Seamless Cheese Hoops. Illustrated	42
Galvanized Ware in Great Britain. Illustrated	42
Domestic Garbage Burner	43
Best-of-All Street Rubbish Cans. Illustrated	43
Request for Catalogues and Quotations	43
Stove and Hardware Dealers	44
Cleveland Prism Glass. Illustrated	44
Wilmington Plumbing Rules	45
Lead Burning	45
The Royal 1900 Air Valve. Illustrated	45
The Magee 019-190 Boilers. Illustrated	46
The Page Boiler Catalogue	46
New York City Notes	46
Heating and Plumbing Notes	47
New Firms and Changes	49
The Coe Brass Company Buy the Chicago Brass Works	49
Making Glue Size	49
Action of Alcohol Upon Metals	49
The Sheet and Tin Plate Strike	50
A Large Stock of Sheets	50
Tin Plate Imports and Exports	50
Fire Proof Sash and Window Frames	50
Utilization of Tin Scrap	51
H J. Lawson's New Cornice Building	51
Tin Mining in the Malay Peninsula	51
Flashings	52
Metal Workers' School in Saxony	52
The Letter Box—	
Making Roof Flanges. Illustrated	53
Small Flues Hinder Heating	53
A Question for the Plumbing Inspector. Illustrated	54
Cleaning and Tinning Old Cans	54
Who Makes the Milan Ventilator?	54
The Scarcity of Labor	54
Trade Report—	
Market Summary	55
Metal Market	55
The Pig Iron Market	56
Chicago Report	56
The Hardware Trade	57
Notes on Prices	57
The Mackie Sheet Steel Tubing Works	59
Metal and Miscellaneous Prices	60
Labor Exchange—	
Help and Situations Wanted	64

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED AUGUST 2, 1901

The following New York quotations are for small lots:

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots.....₩ lb. 37¢
100-lb lots.....₩ lb. 35¢
Aluminum Sheet, B. & S. gauge.
In lots of 50 lbs or more.

	Wider than.....	6-in.	14-in.	24-in.
	And including.....	14-in	24-in.	30-in.
		₩ lb	₩ lb.	₩ lb.
Nos.	13 to 19.....	$0.42	$0.44	$0.47
"	20.....	.44	.46	.49
"	21 to 23	.46	.48	.51
"	24.....	.48	.50	.53
"	25.....	.47	.51	.54
"	26.....	.47	.54	.59
"	27.....	.48	.57	.62
"	28.....	.48	.57	.64
"	29...	.49	.60	.69
"	30.....	.50	.64	.77

Note.—Lots of less than 50 lbs 5¢ ₩ lb extra.

Antimony—

Cookson.....₩ lb. 10½@11¢
Hallett's... .....₩ lb, 8¾@9½¢
U. S.....₩ lb, 8¾@9¼¢

Brass—Planished.....net

Roll and Sheet.....15@20% off

Brass and Copper Tubes

Brazed Brass Tubing—

Brown & Sharpe's Gauge the Standard.

List Feb. 26, 1896.

Plain Round Tube.	Per lb.	
¾-in. up to 2-in.....	$0.35	30@35% off.
⅝-in. up to ¾-in.....	.36	
½-in. up to ⅝-in.....	.38	
⅜-in. up to ½ in.....	.41	
5-16-in. up to ⅜-in.....	.48	
¼-in. up to 5-16-in.....	.65	
3-16-in. up to ¼-in.....	1.00	
⅛-in. up to 3-16-in.....	1.50	
Smaller than ⅛-in.....	Special	
3-in. and larger.....	Special	
2-in. to 3-in. to No. 19, inclusive.	.38	

Copper & Bronze Tubing—

3¢ ₩ lb more than Brass.

Conductors—

Corrugated. *Round or Square.*—
Galvanized ½ or more. N'st'd.....70&5%
" Not Nested.....70&2½%
" Plain Round, ½ or more, Nested.....70&5%
Galvanized, Plain Round, Not Nested. 70&2½%

Spiral Riveted.
Galvanized 40%
See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—See *Strainers, Conductor.*

Copper—

Lake Ingot..... ...17¼@17½¢
Casting. .....16¾@17 ¢
Sheet and Bolt.....21¢ ₩ lb basis
Cold Rolled Sheets.....22¢ ₩ lb basis
Cold Rolled and Polished Sheets ..... 23¢ basis
Planished Sheets.....24¢ basis
Bottoms, Pits and Flats .....₩ lb25¢ basis

Eaves Troughs—

List Feb. 1, 1895.
Lap or Slip Joint, Galvanized, in crates 75&10%

Eave Trough Mitres—

Lap or Slip Joint.....list, 25%

Elbows—Plain Adjustable—

Eastern List.
Tin.....30%
Galvanized..... .....30%
Perfect " Elbows.....40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.	
No. 1.	$0.80	.85	.90	1.00	1.05 per	doz.
No. 2.	.65	.70	.75	.80	.85	"
No. 3.	.60	.63	.65	.70	.80	"

Elbows and Shoes—

Corrugated

Round or Square.

Galvanized 60%

Gasoline—See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16.....₩ lb	3.75....	3.80¢
Nos. 18 to 21.....₩ lb,	3.85....	3.90¢
Nos. 22 to 24.....₩ lb,	3.95....	4.00¢
Nos. 25 and 26...₩ lb,	4.05....	4.10¢
No. 27 ... .₩ lb,	4.15....	4.20¢
No. 28 .....₩ lb,	4.25. .	4.30¢

Russia, Planished, &c.

Genuine Russia, according to assortment.....₩ lb 10½¢
Do. Stained.....6¢@10¢
Patent Planished. ₩ lb A, 9¾¢; B, 8¾¢ net

Galvanized.

Nos. 10 to 16.....₩ lb,	12¢	62½&5@65% off
Nos. 17 to 21. .....₩ lb,	13¢	
Nos. 22 to 24.....₩ lb	14¢	
Nos. 25 to 26.....₩ lb,	15¢	
No. 27.....₩ lb,	16¢	
No. 28.....₩ lb,	17¢	
No. 29.....₩ lb,	19¢	
No. 30.....₩ lb,	21¢	
36 in. 1¢ ₩ lb bigber		

Kerosene—See *etroleum Products*

Lead—

American Pig..... .....4.60@4.62½¢
Bar..... .5⅛@5¼¢
Pipe.....6½¢.....2½% off
Tin Lined Pipe.....12½¢.....20% off
Block Tin Pipe.....40¢.....20% off
Sheet Lead, full rolls... 7¼¢ .....20% off
Sheet Lead, cut.....7¾¢.....20% off
Old Lead in exchange, 1⅝¢ ₩ lb.

Mitres, Eave Trough—See *Eave Trough Mitres.*

Nickel—

Per lb..... .....60@65¢

Paints, Oils, &c.—

Lead, White, Atlantic and Jewett's. 7¼¢
Lead. Amn. White, in oil..... 7@7¼¢
Lead. Red, bbls. and ½ bbls..... 7@7¼¢
Lead, Red, kegs.... ..... 7@7½¢
Linseed Oil:
Raw, ₩ gal..... .....83@84¢
Boiled..... .....85@86¢
Spirits Turpentine:
In bbls.....37½@38 ¢
In cases.....45½@ 46 ¢
Putty:
In barrels and ½ bbls..... .....2½¢
In tin cans..... .....3½¢
In bladders ....2¼¢

Palm Oil. 1500 lb casks.

Fancy Lagos.....₩ lb 6 ¢
Clarified.....₩ lb 5¾¢
Accra .....₩ lb 5½¢
Half Jack.....₩ lb 5¼¢

Petroleum Products—

In Barrels (Barrel Included)
Stove Gasoline.....₩ gal. 12½@13¢
Kerosene..... ₩ gal. 13@13½¢

Pipe, Drain..... ....40%

Pipe, Spiral—See *Conductors*

Registers—

List Feb. 1, 1899.
Black Japanned..... 50&10%
White Japanned.....40&10%
Nickel Plated.....50&10%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze..... .....40%
Electroplated in Brass, Bronze or Copper..... .....40%
White Porcelain..... .....20%
Solid Brass and Bronze Metal.....20%

Roofing Material—

Heavy Single Ply Tar Felt,..... ₩ ton $30.00
2 Ply Roofing Felt....₩ roll, 108 sq. ft. 65¢
3 Ply Roofing Felt....₩ roll, 108 sq. ft. 85¢
Roofing Pitch ₩ bbl.....$2.38

Rosin

(Barrels of 280 lb. Barrels weigh actually about 400 lb).
Common and Good—Strained.
Rosin, C. & D.....₩ bbl. $1.42½@$1.45
Rosin, E. & F.....₩ bbl. 1.65 @ 1.75
Rosin, G. & H.....₩ bbl. 1.80 @ 1.85
Rosin, I. & K.....₩ bbl. 1.95 @ 2.25
Rosin, M. & N.....₩ bbl. 2.75 @ 3.10

Seamless Brass Tubes—

Net List, February 6, 1899.

Shoes and Elbows—See *Elbows and Shoes.*

Slate Roofing—

According to size, f. o. b. cars, Quarry Station.
Pennsylvania:
Best Bangor, ₩ sqr.....$3.25@$4.50
No. 1 Bangor Ribbon, ₩ sq 3.00@ 3.50
Pen Argyle, ₩ sqr..... 3.00@ 3.75
Peach Bottom, ₩ sqr..... 4.85@ 5.60
No. 1 Boys, ₩ sqr..... 3.35@ 3.55
No 1 Chapman Keystone. ₩ sqr..... ..... 3.25@ 4.25
Vermont:
Sea Green, ₩ sqr.....$2.00@$3.00
Purple, ₩ sqr..... 3.75@ 4.25
Unfading Green, ₩ sqr... 3.25@ 4.50
Red, ₩ sqr ..... 6.50@11.00
Maine:
Brownville, Unfading Black:
No. 1 quality..... .....$5.25@7.50
No. 2 quality..... ..$4.25@6.00

Solder—

½&½ guaranteed..... .....19@19½¢
No. 1..... .....15 @17½¢
Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Concentrated Soldering Flux.
f.o.b. New York.
In barrels. ₩ lb.....4¢
Smaller quantities, ₩ lb.....5¢
Eureka Soldering Flux—Triple Strength.
In barrels, ₩ lb ..... 3 ¢
Smaller quantities, ₩ lb .....3½¢
Eureka Soldering Flux—Extra Concentrated.
In barrels, ₩ lb..... ....4½¢
Smaller quantities, ₩ lb .....5 ¢
Eureka Soldering Flux—Crystal.
In 100-lb cases, ₩ lb.....7¢
Gedney's Soldering Fluid.
In carboys or barrels, ₩ lb.....2¢
$1.50 for carboy or barrel; money refunded when returned.
Lennox Soldering Fluid.
In barrels, ₩ lb.....2¢
In carboys. ₩ lb.....3¢
Perfection Soldering Flux.
No charge for package.
Bbls. about 500 lb, ₩ lb.....3¢
½ bbls., about 300 lb, ₩ lb.....3½¢
Kegs, about 110 lb, ₩ lb..... .3½¢
Kegs about 55 lb, ₩ lb.....4¢
Yager's Soldering Salts.
1 lb bottles, each.....60%
5 lb bottles, ₩ lb.....40%

Soldering Coppers—

Per lb.....23@24¢

Spelter—

Western Spelter.....4.45@4½¢

Spiral Pipe—See *Conductors.*

Stove Pipe Elbows—See *Elbows, Stove Pipe.*

Stove Trucks—See *Trucks, Stove*

Strainers, Conductor—

Galvanized 50%

Tin Pigs and Bars—

Banca, pigs. ₩ lb..... .....28¼@28½¢
Straits, pigs, ₩ lb.....28 @28¼¢
Straits, in bars, ₩ lb..... .....28¾@29 ¢

Tin Plates, American Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:		
IC,	14 x 20..... .....$8.25	
IX,	14 x 20.... . ..... 9.75	
IXX,	14 x 20.....11.00	
IXXX,	14 x 20.....12.25	
IXXXX.	14 x 20.....13.50	
Melyn Grade:		
IC,	14 x 20..... ..... 7.75	
IX,	14 x 20..... ..... 9.25	
IXX,	14 x 20. ....10.50	
IXXX,	14 x 20 ....11.75	
IXXXX	14 x 20.... .....13.00	
Allaway Grade:		
IC,	14 x 20..... .... 6.75	
IX,	14 x 20 .... 7.85	
IXX,	14 x 20..... .... 8.95	
IXXX,	14 x 20..... 10.05	
IXXXX.	14 x 20. .....11.15	

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20.....	$6.15@6.25
" "	IX, 14 x 20.....	$7.10@7.25

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 lb.....	15¢
95 lb.....	20¢
90 lb.....	25¢
85 lb.....	30¢

Terne Plates—

N. B.—The following prices are for IC, 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 lb coating and $2.50 to $3.00 advance for 15 lb and upward.

About 40 lb coating.....	$17.50@18.00
About 30 lb coating.....	16.75@17.25
About 20 lb coating.....	14.75@15.25
About 15 lb coating.....	12.75@13.25
About 8 lb coating.....	11.50@12.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets).....	$15.00
IXX, 14 x 28..(112 sheets).....	16.00
IXX, 14 x 31..(112 sheets).....	17.50

Troughs Eave—See *Eave Trough*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00
Steel Lock Frame, per doz..... 18.00
Daisy Improved pattern, ₩ doz... 18.00

Tubing—

Tin.....50% | Galvanized.....50%
Fittings for do.....40%

Zinc—

600 lb casks ₩ lb..... .....6¾¢
Per lb.....7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Fittings—

List of Oct 7, 1899
Cast Iron Fittings, Black and Galvanized, Standard sizes.....60@60&10
Cast Iron Bushings and Plugs....65@66⅔%
Cast Iron Flanges.....65@66⅔%
Malleable Iron Fittings.....50&5@55%
" " Bushings.....65@66⅔%
" " Unions..... 65@66⅔%
Wrought " Nipples.....65@66⅔%
" " Couplings.....65@66⅔%
" " Long Screws.....65@66⅔%

Cast Iron Soil Pipe—

List Feb. 25, 1901.
2 to 6 inch inclusive.
Standard..... 55&10@60%
Extra Heavy..... .....65@65&10%
All Fittings..... .....70&5@70&10%

Merchant Wrought Iron Pipe—

1 st Feb. 15, 1900
Random Lengths.

	Black	Galv
⅛ to ⅛ inch.....	50&5%	40%
¼ to 10 inch.....	60%	40&10@50%
11 and 12 inch.....	50%	35%

Extra Strong Pipe—

Random Lengths.

	Black	Galv.
⅛ to ⅛ in.....	45%	30%
¼ to 2 in.....	45%	30%
2½ o 8 in.....	45%	30%

Valves Cocks, &c.—

Iron Body Valves.....65&5@70%
Air Cocks and Radiator Air Cocks..... 70@70&5%
Soldering Unions..... .....70@70&5%
" Nipples .....70@70&5%
Brass Unions (Rough and Finished).. 65&5@70%
Jenkins Bros.':
Iron Body Valves, except Gate Valves 55%
All Iron Valves, except Gate Valves.. 40%
Iron Body Gate Valves.... ....50%
All Iron Gate Valves.... .....35%
Iron Cocks, all Iron.....60&10%
" " with Brass Plugs.....60%
Brass Globe, Angle and Cross Valves... 65@65&10%
" and Angle Valves, hose outlet.....65@65&10%
Brass Garden Hose Valves....65@65&10%
" Horizontal, Vertical and Angle Check Valves.....65@65&10%
Brass Safety Valves.....55%
" " Low Pressure....55%
Brass Radiator Valves.....65@65&10%
" " Jenkins 55%
Brass Jenkins' Globe, Angle, Cross and Corner Valves.....55%
Brass Jenkins' Safety and Check Valves..... 40%
Brass Jenkins' Gate Valves.....50%
Brass Steam Cocks.....65@65&10%
" Gas Meter and Union Meter Cocks.....65@65&10%
Brass Fittings, Rough.....65@65&5%
" " Finished.....65@65&5%
" Bushings.....65@65&10%

Plumbers' Brass Work—

List of December 7, 1896.
Ground Key Work:
Rough Bibs and Stops.....65@65&5%
Finished Bibs.....60@60&5%
Rough Stop and Stop and Waste Cocks.....65&5@70%
Rough Stop and Stop and Waste Cocks, Patented.....60@60&5%
Compression Bibs.....65@65&5%
" " Flanged..... ...70%
Compression Bath Cocks and Double Bath Cocks..... .....65@65&5%
Compression Basin Cocks .....65@65&5%
Fuller Bibs.....70@70&5%
Fuller Basin Cocks, Nos. 1 to 4.70@70&10%
Fuller Bath Cocks, No. 4½.....$2.25 net
Chain Stays.....60@60&5%
Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face....₩ set	$1.00	$1.10
Ground Face..₩ set	$1.05	$1.15

Basin Plugs.....60@60&10%
Sink or Bath and Wash Tray Plugs.... 60@60&10%
Basin Clamps.....70@70&10%

Bath Tubs—

Cast Iron Enamelo Bath Tubs.
List of March 26, 1900.
Regular Patterns, Guaranteed, Complete Line.....30&10@40%
All High Grade and Special Pattern (except as below).....20%
"Diana" and "Brighton."..... .....20%
Non-Guaranteed Brands, complete line 40%
Steel Clad Copper Lined Bath Tubs, list of Feb. 1, 1899..... 45@50%
Solid Porcelain Bath Tubs.....20%
Solid Copper, list of Feb. 1, 1899.....20%

Boilers—

Standard Boilers:
30 gal.....65@65&10%
35 and 40 gal.....65@65&5%
Other sizes up to 52 gal....50&10@60%
52 gal. and above.....50&10@60%
Extra Heavy Boilers:
18 to 52 gal..... 50&10@60%
53 gal. and above..... ....40&10@45%

Sinks—

	Cast Iron—Black.	Galv.
Sinks, Square, Half Round and Corner.	50&5%	50&10@60%
Sink Legs. ....50&5%		50&10@60%
Sink Backs.....50&5%		50&10@60%

Wrought Steel—

New Era, Galv'd and Enameled. ..70&5%
New Era, Painted.....50&10%
L. & G.....50%

Miscellaneous—

Earthenware, List of July 17, 1899.....
Basins, Urinals and Hoppers..... 40%
Closet Bowls, Sundries, Washouts and Pedestals.....40%
Drawn Lead Traps, List of June 3, 1901.....40&10@50%

ALPHABETICAL LIST OF ADVERTISERS.

Allbe, Chas. A..... 80
American Hardware Mfg.Co. 76
American Sheet Steel Co....1&72
American Tin Plate Co. 72
Arcade Mfg. Co..... 28
Armstrong Mfg. Co..... 33
Asheville Mica Co..... 23
Asphalt Ready Roofing Co .. 73
Atlas Radiator Pedestal Co... 26
Auld & Conger..... 68
Barstow Stove Co..... 80
Beckwith, P. D., Est. of..... 2
Berger Bros. Co.....27&69
Berger, L. D..... 76
Berger Mfg. Co 74
Bergstrom Bros. & Co..... 15
Bertsch & Co..... 78
Bliss, E. W. Co..... 78
Blodgett, G. S. Co..... 27
Boss Washing Machine Co.... 67
Boynton Furnace Co..... 6
Brand Stove Co..... 21
Bray, J. & Co..... 68
Bridgeport Crucible Co..... 29
Bridgeport Stove Works..... 26
Brien Heater Co..... 23
Brobard Co..... 27
Brooklyn Metal Ceiling Co.... 70
Bruce & Cook.....73&80
Burton, W. J. & Co.... 73
Butler Steel Furnace Co..... 24
Callahan, Geo. & Co..... 69
Canton Steel Roofing Co..... 75
Carroll, J. B..... 32
Champion Steel Range Co.... 24
Cheney, S. & Son 1
Cincinnati Stamping Co....26&76
Clark, Henry N. Co..... 27
Clark Novelty Co..... 67
Clark, Quien & Morse..... 71
Clason Arch. Metal Works... 68
Clayton & Lambert Mfg. Co.. 32
Clough, R. M..... 79
Colwell Lead Co..... 30
Connors, Wm. Paint Mfg. Co. 68
Cooney & Geiger..... 69
Cope, Geo. W 25
Cortright Metal Roofing Co... 73
Crosby Steam Gage & Valve Co..... 1
Crown Ventilator Co..... 69
Curtis & Curtis Co..... 33
Dean Boiler Co..... 25
Detroit Stove Works..... 16
Dighton Furnace Co.....1&20
Dixon, Jos. Crucible Co..... 30
Double Truss Cornice Brake Co 76
Dowman Mfg. Co..... ... 69
Drake, W. H..... 22
Drouve, G. Co..... 76
Edwards, J. H..... 32
Eller, J. H. & Co..... 75
Energy Elevator Co..... . .. 30
Enterprise Stove Co..... 15
Esterbrook's, R. Sons..... 80
Excelsior Stove Mfg. Co..... 16
Farnan Brass Works..... 33
Fenn, Geo. E..... 69
Floyd, Wells & Co..... 21
Follanshee Bros. Co..... 1
Forest City F'dry & Mfg. Co.. 22
Foster, F. W. Mfg. Co..... 30
Friedley & Voshardt..... 74
Frink, I. P..... 80
Front Rank Steel Furnace Co 14
Fuller & Warren Co..... 1
Fulmer, J. H..... 75
Galesburg Cornice Works.... 76
Galt, John & Sons..... 68
Garry Steel & Iron Co..... 73
Garvin Machine Co..... 77
Gennine Bangor Slate Co..... 68
Giblin & Co..... 16
Globe Ventilator Co..... 69
Gobeille Pattern Co..... 28
Gordon, W. J..... 79
Gorton & Lidgerwood Co..... 1
Graham, Chas Chemical Pottery Wks..... 31
Greene, W. F., Est. of..... 23
Gummey, McFarland & Co... 71
Gurney & Co..... 25
Gurney Heater Mfg. Co..... 21
Hamlin, G. R..... 67
Harrington & King Perforating Co..... 61
Hart & Crouse Co..... 18
Hessler, H. E. Co..... 29
Hoffman, Geo. W..... 27
Howes, S. M. Co..... 27
Howson & Howson 67
Hungerford, U. T., Brass & Copper Co..... 79
Independent Register Co..... 26
International Correspondence Schools..... 65
International Heater Co..... 3
Janney, Steinmetz & Co..... 68
Jenkins Bros..... 1
Johnson, E. J. & Co..... 68
Joliet Stove Works..... 10
Keeley Stove Co..... 15
Keene, Geo. C. & Co 79
Kelsey Furnace Co..... 84
Kemp, C. M. Mfg. Co..... 30
Kewanee Boiler Co..... 20
Kieley & Mueller..... 1
Koven, L. O. & Bro..... 32
Lamb & Ritchie..... 31
Landers, Frary & Clark..... 30
Lawrence-Letts Elbow Co.... 28
Lennox Machine Co..... 23
Livermore, H. F..... 32
McClure & Co..... 80
McLain, J. H. Co..... 24
McLeod & Henry Co..... 1
Magee Furnace Co 1
March-Brownback Stove Co.. 11
Marcy Stove Repair Co..... 29
Marlin & Co..... 74
Marston, I. G. & Co..... 33
Meilink Mfg. Co..... 33
Menrer Bros. Co..... 71
Meyer, F. & Bro. Co 21
Michigan Stove Co.....4&5
Millar, Chas. & Son Co..... 80
Millers Falls Co..... 79
Miner & Peck Mfg. Co 30
Montross Metal Shingle Co.... 73
Morgan & Co..... 32
Mueller, L. J. F'ce Co..... 18
Munsell, E. & Co..... 28
National Enameling & Stamping Co..... 34
National Pipe Bending Co.... 22
New Haven Novelty Machine Co..... 31
Newton, Wm. M..... 1
New York Iron Roofing & Corrugating Co..... 71
New York Trade School..... 65
Niagara Machine & Tool Wks. 77
Noyes & Nutter Mfg. Co..... 22
O'Halloron & Jacobs..... 68
Ohl, Geo. A. & Co..... 78
Osborn, J. M. & L. A 70
Ostrander, W. R. & Co..... 79
Peck, Stow & Wilcox Co..... 77
Perkins, J. L. & Co..... 29
Phila. Machine Tool Co..... 77
Phillips & Clarke Stove Co... 12
Pierce, Butler & Pierce Mfg. Co..... 23
Pittsburgh Stove & Range Co. 8
Pocock, Oliver..... 77
Portsmouth Stove & Range Co.... 14
Presbrey Stove Lining Co..... 29
Quincy Stove Mfg. Co..... 13
Reading Stove Works..... 9
Reeves Mfg. Co..... 70
Resor, Wm. & Co..... 8
Rhodes, L. E. Co..... 32
Richmond Stove Co..... 17
Ringen Stove Co..... 7
Robinson, J. M. & Co..... 79
Rochester Radiator Co..... 25
Rutland Fire Clay Co..... 28
Sackman, F. A..... 67
Safety Furnace Pipe Co..... 25
Salem Nail Co..... 69
Sanborn, John..... 73
Saunders', D. Sons..... 33
Schaffer, John P..... 26
Schellhammer & Son..... 25
Schill Bros. Co..... 14
Schneider & Trenkamp Co.... 6
Schratwieser Metal Lath Works..... 73
Schwab, R. J. & Sons Co..... 20
Schwerdtle Stamp Co..... 67
Seavey Mfg. Co..... 26
Sheppard, Isaac A. & Co..... 1
Silver & Co..... 67
Smith, H. B. Co..... 19
Smith & Anthony Co..... 80
Smith & Thayer Co 18
Smith-Warren Co..... 70
Special Notices..... 65
Sperry, D. R. & Co..... 67
Stamford Foundry Co 23
Stanton Heater Co..... 26
Stiles & Parker Press Co..... 73
Stocking, E. B..... 67
Stolz, Frank D..... 22
Stuber & Knuck..... 30
Taylor & Boggis Fdry. Co.... 27
Taylor Co., N. & G..... 80
Townley, H. P..... 65
Trimont Mfg. Co..... 30
Troy Nickel Works..... 29
Tubular Heating & Ventilating Co..... 17
Union Mfg. & Specialty Co... 73
Valentine, M. D. & Bro. Co... 29
Vance Boiler Works..... 22
Vanderman Plumbing & Heating Co..... 32
Vedder Pattern Works..... 23
Vogel, William & Bros 67
Vulcan Metal Refining Co.... 65
Vulcan Western Co..... 65
Washburne, E. G. & Co:....69&77
Wayne, Anthony Mfg. Co.... 67
Weir Stove Co..... 80
Weiss, H. & Co,..... 76
Wheeler, W. A..... 76
Wireton Heating Co..... 23
Wister, L. & R. & Co 80
Wolff, L. Mfg. Co..... 33
Wood & Bishop Co..... 23
Wood, Alan Co..... 73
Young, Jos. H..... 32
Zero Valve & Brass Mfg. Co.. 31

PERFORATED METALS

STEEL, IRON, COPPER, ZINC, BRASS, TIN, and all other metals PERFORATED AS REQUIRED for

Grain Cleaning and Mining Machinery, Woolen, Cotton, Paper and Pulp Mills, Rice, Flour and Cotton Seed Oil Mills, Sugar and Malt Houses, Distilleries, Filter Presses, Stone, Coal and Ore Screens, Brick and Tile Works, Filters, Spark Arresters, Gas and Water Works, Oil, Gas and Vapor Stoves, Coffee Machinery, &c., &c.

Standard Sizes Perforated Tin and Brass Always in Stock.

The Harrington & King Perforating Co.,

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SEE ALPHABETICAL INDEX, PAGE 61.

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SEE ALPHABETICAL INDEX, PAGE 61.

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DAVID WILLIAMS COMPANY, Publishers.

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

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HELP WANTED.

At once, two STOVE MOUNTERS. Ohio Stove Company, Portsmouth, Ohio. Aug. 3

FOUNDRY FLASK MAKERS, to go out of the city; good wages. C. C. Heath & Co., 63 North Second street, Philadelphia, Pa. Aug. 3

Young man acquainted with builders and architects in and nearby Philadelphia, to sell furnaces. C. C. Heath & Co., 63 North Second street, Philadelphia, Pa. Aug. 3

TINSMITH and SHEET IRON WORKER at once; first-class workman thoroughly familiar with all branches of the business; steady job to a good reliable man, no others need apply; state wages and experience. Lock Box 1086, Southbridge, Mass. Aug. 3

Two SALESMEN on stoves, ranges, heaters, gas and oil goods; those having had experience with dry goods houses preferred; good opportunity for the right parties; security required. Call or address John M. Wolf Company, 742-44 Flushing avenue, Brooklyn, N. Y. Aug. 3

A No. 1 PLUMBER, TINNER and BICYCLE MAN; must be first-class workman, sober and industrious; good wages to right man. Box 127, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Aug. 3

An A1 TINNER and FURNACEMAN; state experience, age, wages. Stephenson, Lakewood, N. J. Aug. 3

Two TINSMITHS of experience, with brains and a reasonable amount of ambition; good steady job for two men with above qualifications; no botches need answer. E. Dodge, West New Brighton, Staten Island, N. Y. Aug. 3

A first-class IRON STOVE PLATE PATTERN FITTER. Stove Works, Waynesboro, Va. Aug. 3

A competent, experienced FOREMAN for range manufacturing; one who understands the mounting of castings and riveting and cutting sheets for ranges. Apply Box 206, Memphis, Tenn. Aug. 3

A first-class FOREMAN for an architectural steel metal works; must be a first-class foreman for cornices and have had experience in all branches of the manufacturing of sheet metal ornaments; must be a thorough mechanic, energetic and sober; steady work and excellent wages for the right man; state salary expected and where employed last. "Stamping," care *The Metal Worker*, New York. Aug. 3

Three or four good TIN and SHEET IRON WORKERS. Apply or address United States Headlight Company, Buffalo, N. Y. Aug. 3

Good TINSMITHS and CORNICE MAKERS. Alfred Martin & Co., Rockford, Ill. Aug. 3

Good SHEET IRON WORKER; steady job for the right man; state age, experience, if married, and wages expected for a steady job to Box 428, Hartford, Conn. Aug. 3

Four first-class TIN and SHEET METAL WORKERS at once; will pay $2.50 per day of nine hours. Estes Hardware Company, Birmingham, Ala. Aug. 3

A first-class CORNICE CUTTER in a large shop in New York. "A. Z.," care *The Metal Worker*, New York. Aug. 3

At Buffalo, N. Y., first-class SHEET METAL WORKERS for factory work. Address, stating wages expected and references, "Buffalo," care *The Metal Worker*, New

At once, a first-class PLUMBER and TINSMITH; one having some knowledge of furnace work; to go in the Catskill Mountains; address, stating wages; a good position to a sober and reliable man. A. McCreery, Tannersville, Greene County, N. Y. July 27

In a manufacturing establishment, a TIN, SHEET and GALVANIZED IRON WORKER who understands plumbing; permanent employment to the right man. "A.," care *The Metal Worker*, New York. July 27

A first-class TINNER and SLATER and all around jobber; steady work for sober man. B. F. Rockhill, Columbus, N. J. July 27

A first-class TINSMITH, who understands furnace work, roofing, bench work and general country jobbing; a yearly job for right man; country town of 4000; give age, experience and salary expected. "Yearly," care *The Metal Worker*, New York. July 27

A good, all round PLUMBER, STEAM FITTER and TINSMITH; a steady job to the right man. C. H. Avery, Nashua, N. H. July 27

A capable man to take charge of the skylight branch of our business. E. Van Noorden Company, 944 Massachusetts avenue, Boston, Mass. July 27

A first-class reliable TINSMITH and JOBBER. C. M. Dorr, Hoosick Falls, N. Y. July 27

One of the world's largest stove makers wishes to secure the services of experienced SALESMAN, who can command a large trade. "Energy," care *The Metal Worker*, New York. July 27

A first-class SALESMAN, calling on hardware trade in Missouri, Kansas, Oklahoma and Indian Territory, to handle a good cheap line of steel ranges on a commission basis; in answering, state territory covered. Room No. 2, Rogers Building, Kansas City, Mo. July 27

An all around TINNER, inside and outside work; PLUMBING and FURNACE WORK; must be sober; steady work for the right man; state wages wanted. Abr. Penner, Mountain Lake, Minn. July 27

A first-class man on COFFEE URNS and STEAM TABLES; for such a man good wages will be paid. "Coffee Urns," care *The Metal Worker*, 117-119 South Fourth street, Philadelphia, Pa. July 27

Two good outside TINNERS and ROOFERS in tin and slate; steady job the year round and good wages. P. H. Bayley, Sidney, Ohio. July 27

SALESMAN for ranges and furnaces; man thoroughly acquainted with building trade in New York City and suburbs. "C. and C.," care *The Metal Worker*, New York. July 27

SITUATIONS WANTED.

By an experienced man who is familiar with the details of the stove and furnace business and has had a practical and varied experience in putting these goods on the market; can command a good business with the right line of goods; would like a position with a good live house. "B. N. Y.," care *The Metal Worker*, New York. Aug. 3

By an experienced TINNER and PLUMBER; can give good reference; Oregon or California preferred. P. O. Box 146, Independence, Oregon. Aug. 3

In tin shop; three years' experience; some knowledge of slating; can do work that comes to ordinary tin shop; Eastern Iowa or Western Illinois preferred; am steady, strictly temperate, and not afraid to work; can give references. "H. C. H.," Box 363, Fairbury, Neb. Aug. 3

TINSMITH on brass, copper and brazing work; good all around man. L. Chass, 186 Norfolk street, New York. Aug. 3

PLUMBER and GAS FITTER to go anywhere; has worked in a country town; first-class reference. E. Walsh, 7 East Eighty-first street, New York. Aug. 3

TINSMITH; 16 years' experience at inside and outside job work and assortment work; permanent position desired; will be at liberty August 15; references if required. Ed. Grove, Room C, Sturges Block, Mansfield, Ohio. Aug. 3

By a first-class TINSMITH, ROOFER and FURNACEMAN, a steady position in New York, Brooklyn or Jersey City; wages moderate; best of references. John Madden, Eighth avenue, between Thirty-seventh and Thirty-eighth streets, Brooklyn, N. Y. Aug. 3

A practical STEEL RANGE BUILDER with 14 years' steady experience as a working foreman; up to date; to produce a range or cook at a minimum cost; married; strictly temperate; age 33; best of references. "B. W. I.," care *The Metal Worker*, New York. Aug. 3

By a first-class TINNER (35); married; 15 years' experience; desire steady position with a first-class firm in Colorado or California; can do tin roofing, guttering, slate roofing, pump and some furnace work; 10 years with present employer; reason for change, wife's health is poor. J. A. Willson, Harrodsburg, Ky. Aug. 3

Young man with several years' experience in the range and heating business as shipping, bill and entry clerk wishes a position in that line; some knowledge of bookkeeping. "R. D.," care *The Metal Worker*, New York. Aug. 3

All around hand and good PLUMBER; country preferred. Harry Rosenbloom, 92 Madison street, New York. Aug. 3

SALESMAN with ten years' experience in the stove and furnace business wishes engagement; single, temperate; a hustler; good references. "Furnastore," care *The Metal Worker*, New York. Aug. 3

By a first-class CORNICE and CEILING DRAFTSMAN and PATTERN CUTTER; 29 years old, married and strictly temperate; best of references. W. G. Andrews, General Delivery, Pittsburgh, Pa. Aug. 3

To represent a first-class manufacturer; have had 15 years' experience with furnaces, steam and hot water; competent to estimate and lay out work for heating and ventilating; would prefer Boston, New York or the East. "A. F.," care *The Metal Worker*, New York. Aug. 3

TINSMITH and SHEET IRON WORKER; good all around man, wants steady position; 18 years of experience. "Tinner," care of Bissinger, 430 West Fortieth street, New York. Aug. 3

By a competent young TINNER with 12 years' experience at sheet metal work; good mechanic; sober and reliable; can do any work that generally comes to a tin shop; good plumber and can wipe joints; Swedish; steady work wanted west of Mississippi River. John S. Nelson, care General Delivery, Des Moines, Iowa. Aug. 3

By a first-class PATTERN CUTTER, TIN and SHEET IRON WORKER; thoroughly understands the construction and erection of dust collectors, blower and exhaust piping, heating and ventilation; steady position, New York City. H. Barthol, 97 Third avenue, New York. Aug. 3

At TINNING and JOBBING by a young, unmarried man; six years' experience; country shop preferred; can give good reference, including honesty and sobriety. Morrison Mott, Oyster Bay, L. I. Aug. 3

Steady position in a village of about 3000 inhabitants, by a TIN and SHEET IRON WORKER; eight years' experience at in and outside work, wind mill, iron pipe and pump work; also general knowledge of plumbing; wages, $10.50 per week for steady position by year; references. "Tinsmith," South Deerfield, Mass. July 27

By a practical STEAM and HOT WATER FITTER and PLUMBER; am strictly sober, married, and have had over 25 years' experience. "E. C. T.," care *The Metal Worker*, New York. July 27

By a first-class TIN and SHEET IRON WORKER; can cut patterns, do pipe fitting, some plumbing; A1 bench hand; strictly temperate; best of reference; would like to take charge of an estate or factory. Geo. Keegan, 63 Court House Pl., Jersey City, N. J. July 27

First-class PLUMBER, 10 years' practical experience, desires a steady position in any part of the United States; can furnish A1 reference. James P. Goodsill, care C. P. Erlenback, 210 East Fifty-seventh street, New York. July 27

As TRAVELING REPRESENTATIVE with metal and plumbing supply house; am acquainted with trade in Eastern and Central New York, also Eastern Pennsylvania; can furnish good reference. "Penna. and N. Y.," care *The Metal Worker*, New York. July 27

By young man, PLUMBER, with some knowledge of tin roofing and spouting; sober and reliable; single, unencumbered; can go anywhere. "F. R. P.," Plumber, Perry, Wyoming County, N. Y. July 27

Experienced TINNER, PLUMBER and HARDWARE MAN, with full set of tools and machinery, wants situation with hardware concern needing a man of ability in these lines. Box 126, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. July 27

By a competent young PLUMBER, steady job, moderate wages; can furnish excellent references as to ability, sobriety, honesty, &c., from last employer; city or country. E. P. Burke, 422 Broad street, Newark, N. J. July 27

By a young man in the plumbing business; six years' experience in city shops; also experience in country mansions. Emil H. Hill, Jr., Oyster Bay, L. I. July 27

By a strictly sober and reliable TIN and SHEET IRON WORKER, experienced at in and outside work, spouting, wind mill, steam fitting, and general knowledge of plumbing; will work for $10 per week by the year; references. "G. S.," South Deerfield, Mass. July 27

By a first-class CORNICE MAKER and CUTTER. Adolph Klein, 242 East Tenth street, New York. July 20

By a first-class PLUMBER and FITTER; willing to work city or country; steady and reliable. J. Abrams, Box 75, Hempstead, N. Y. July 20

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Tin Shop and Stove Store. In best location in town of 3,000. Invoice $2,000. Liberal discount. Stock in good condition, but must quit business on account of ill health. Address

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Good clean stock of Hardware, Stoves, Queensware and Furniture, in a live town of 2 000 inhabitants in Central Illinois. Will invoice about $6,000. Will sell or rent building. Do a good business. Good reasons for selling. Cash for stock. Address

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One complete set of Tinners' Tools and Machines and also set of Plumbing Tools. In good order. Address

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In growing village of 6,000 inhabitants. A Stove, Tin, Hardware, Sporting Goods and House-furnishing business. Rooms also for a Plumber's shop; have been used as such. Will be sold cheap for cash, or part cash and part notes. Reasons for selling. Write to

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Two No. 10 Pease Economy Portable Hot Air Furnaces with casings.
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Second-hand, in good order, 1 P. S. & W. adjustable bar tin folding machine, No. 154 or No. 54, 30 inch; address FRANK E. LAHR, Lincoln, Neb.

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One Forbes or Curtis Hand Pipe Machine which will cut from 4 to 6 in. pipe, with cutter. State the condition of the machine, length of time used and lowest price for cash.

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Well established. Doing retail-wholesale business present owners very desirous of retiring from store trade. Will arrange special terms with right party for purchase within next 30 days. Address "HARDWARE BUSINESS," care *The Metal Worker*, New York.

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500 tons to be disposed of at a low rate according to quantities. Send offers to "F A. E.," 271, care Rudolf Mosse, Frankfurt a.M., Germany.

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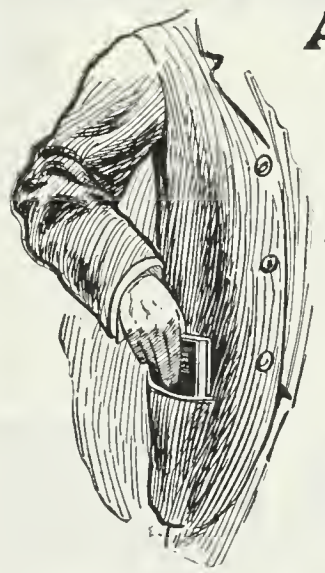

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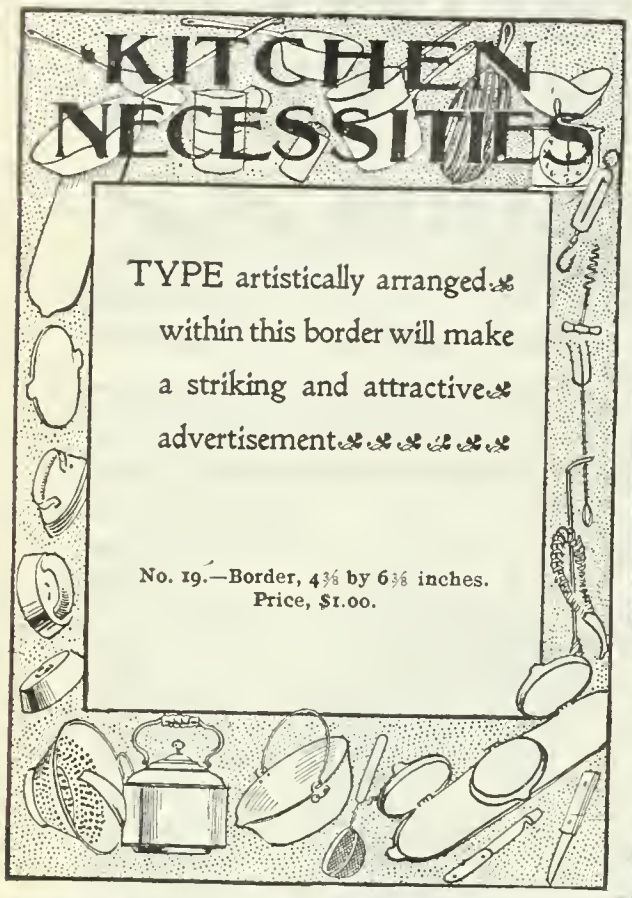
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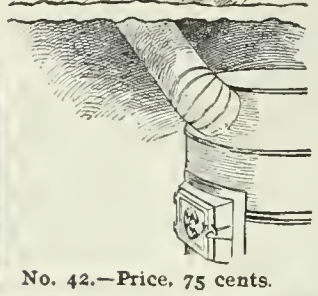

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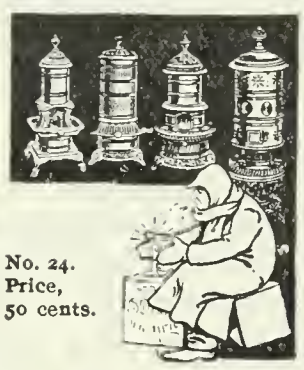

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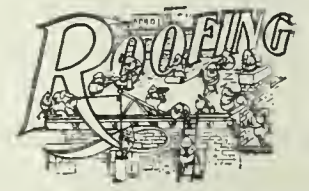

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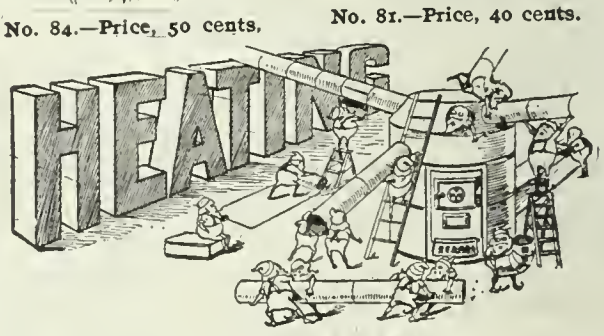

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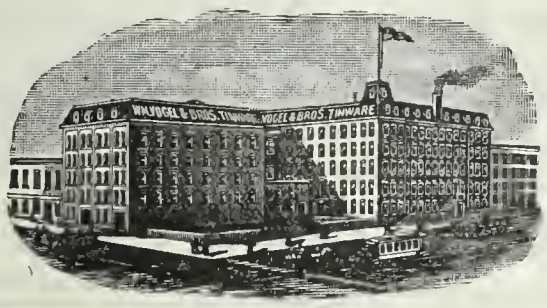

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References Furnished on Application.
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Solicitors of Patents.

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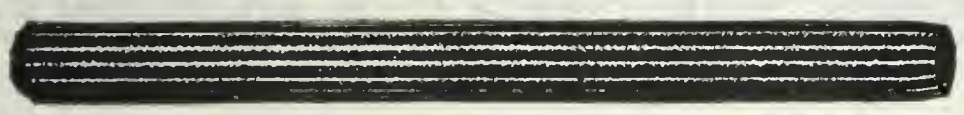

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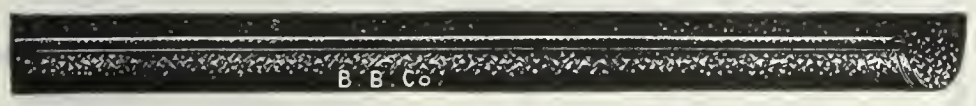

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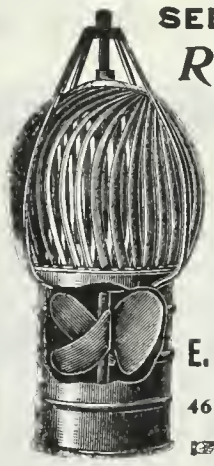

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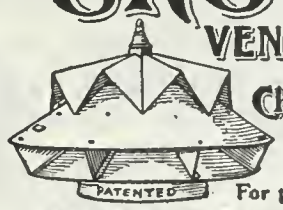

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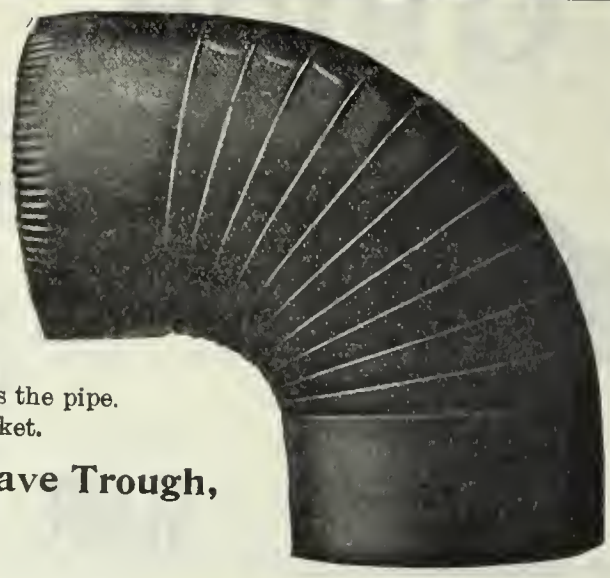

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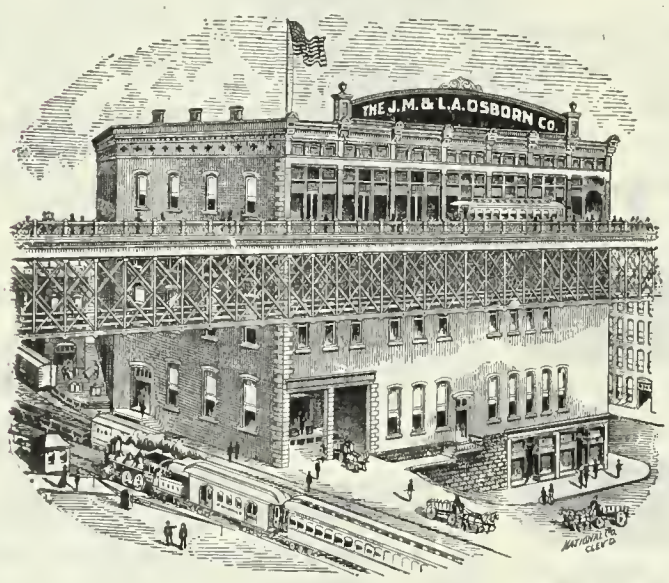

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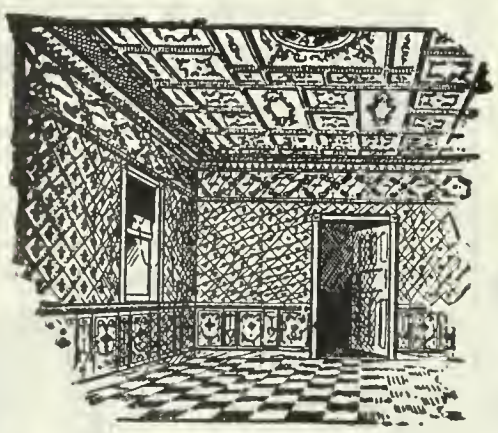

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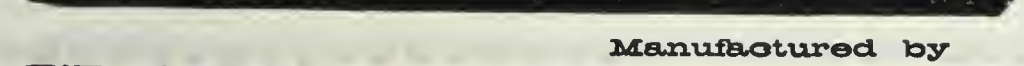

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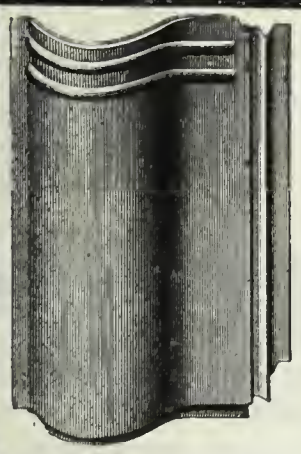

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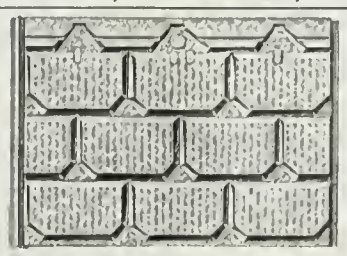

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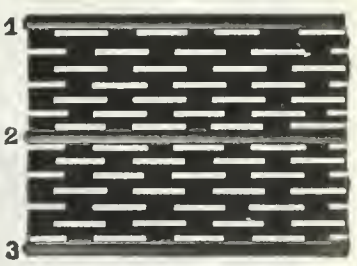

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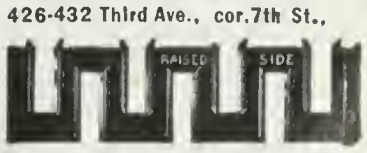

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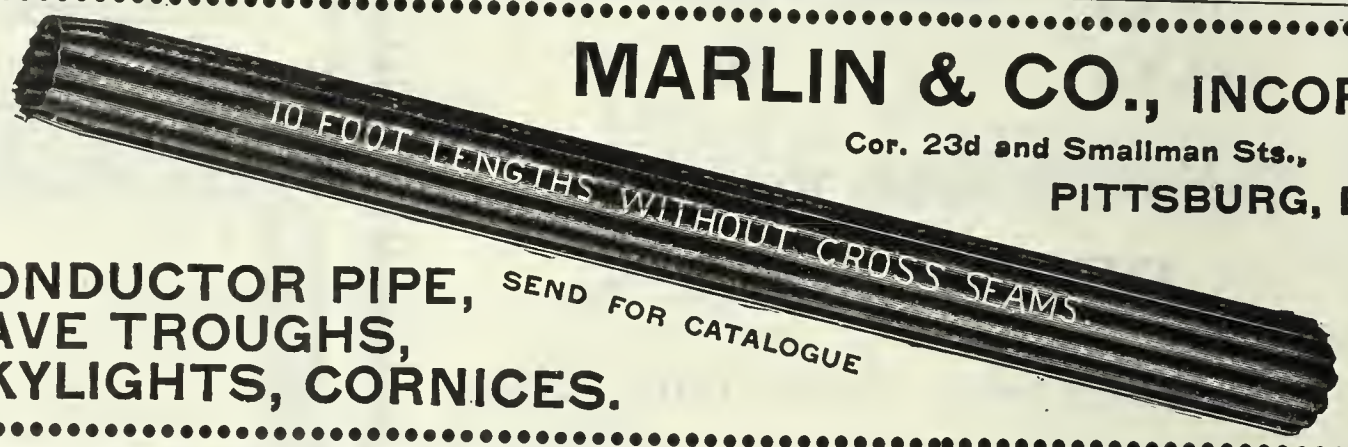

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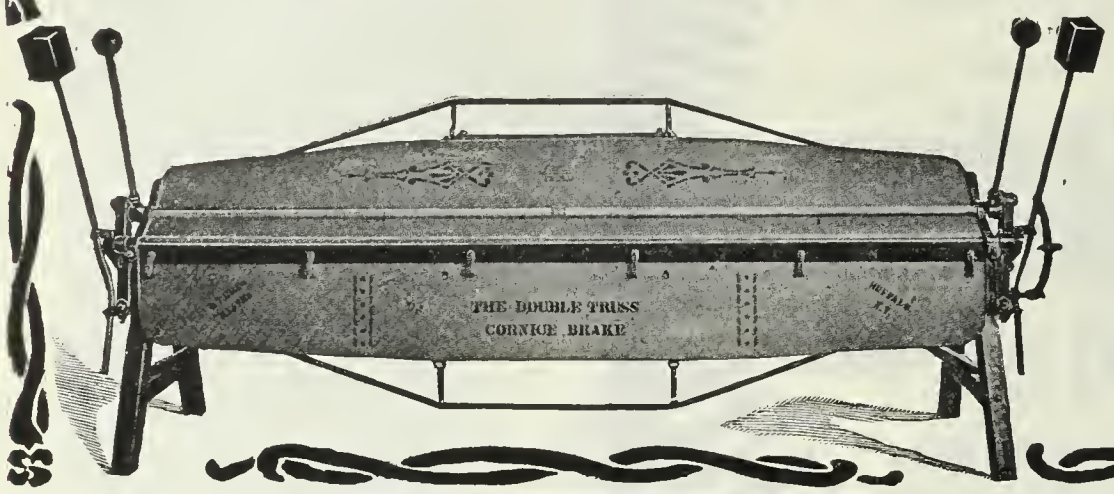

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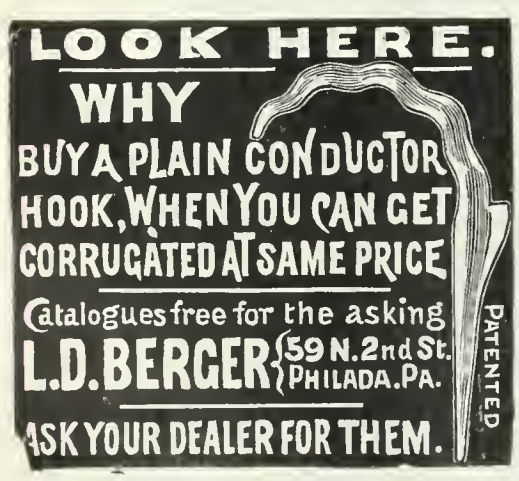

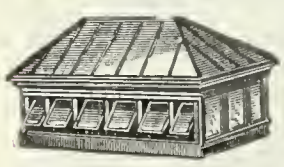

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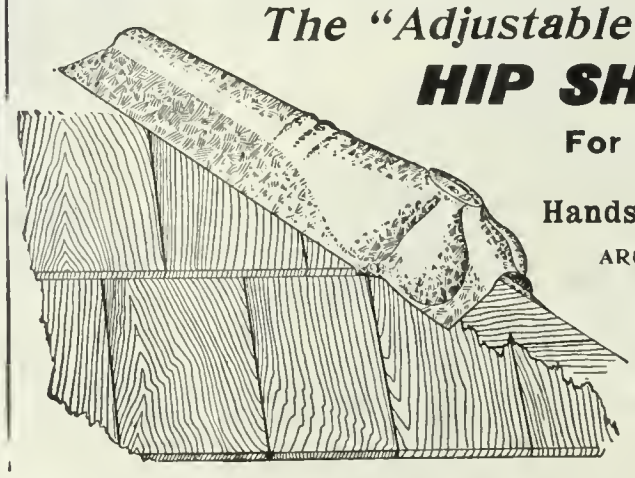

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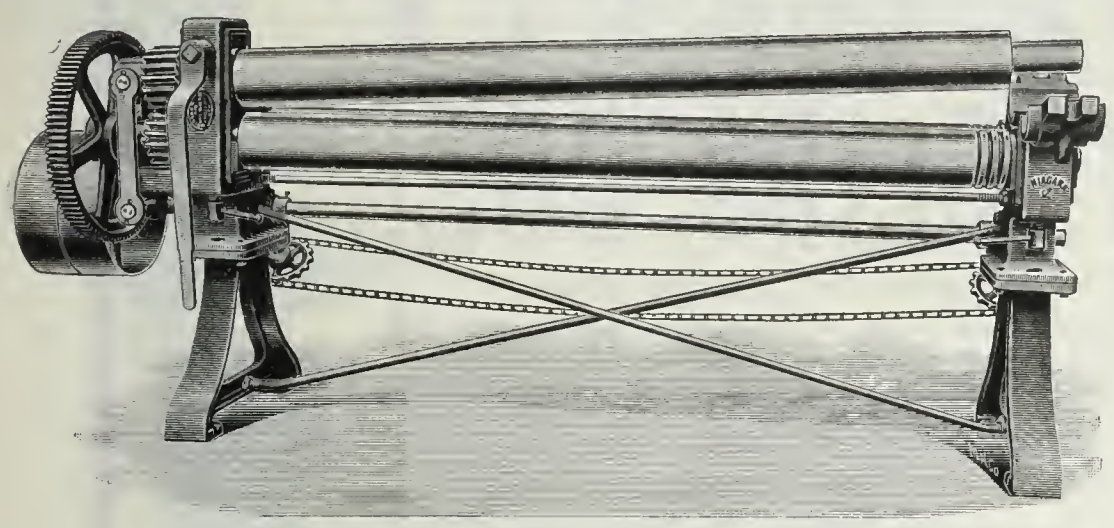

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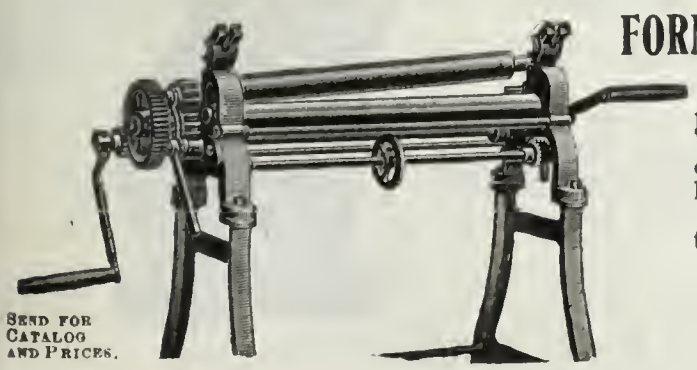

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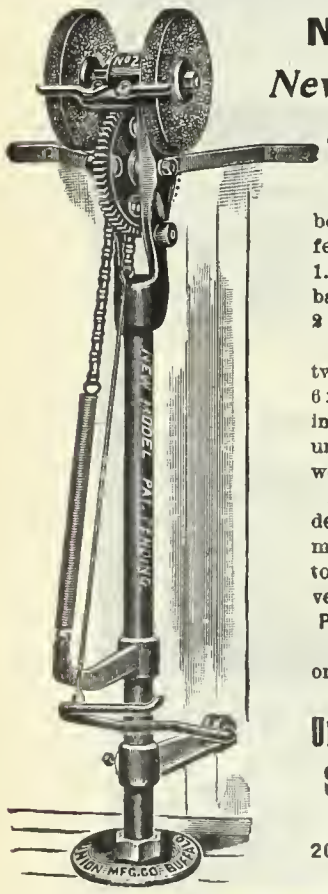

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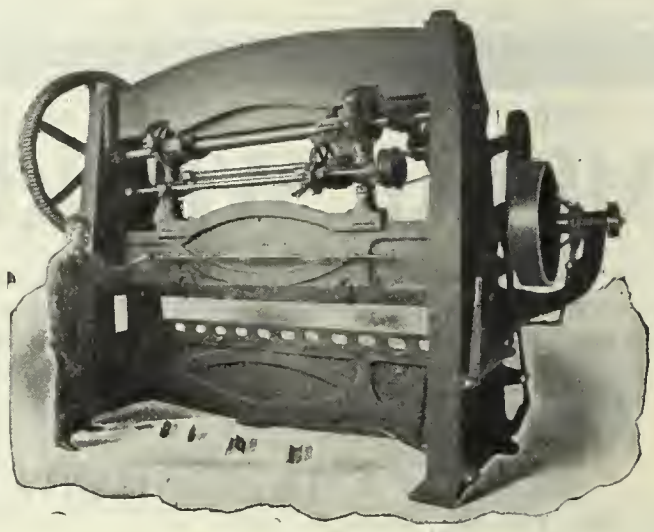

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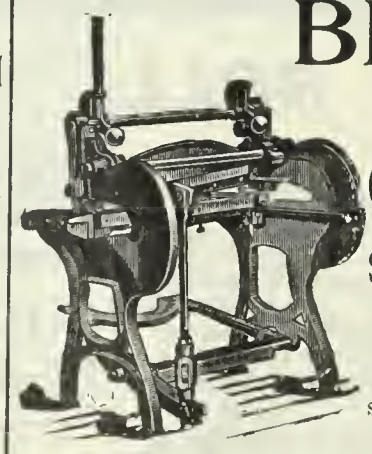

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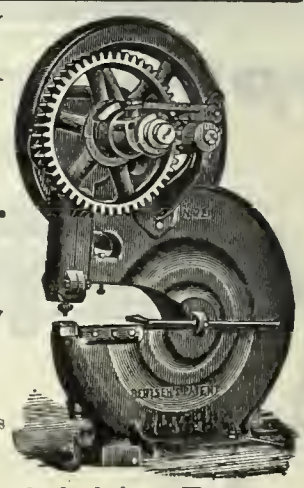

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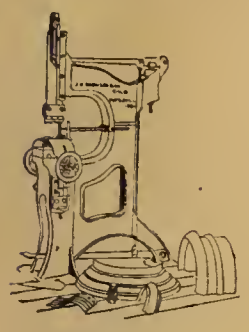

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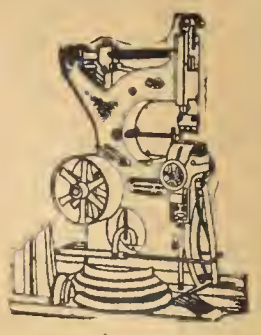

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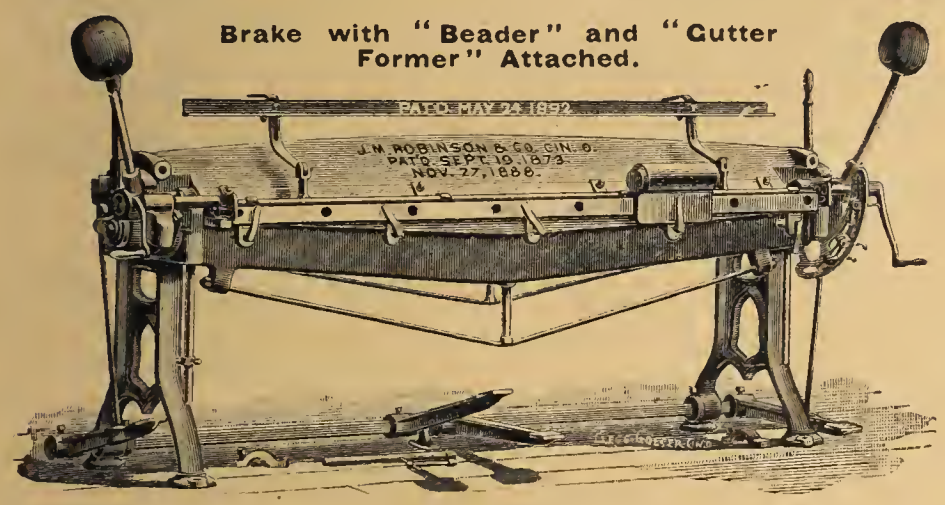

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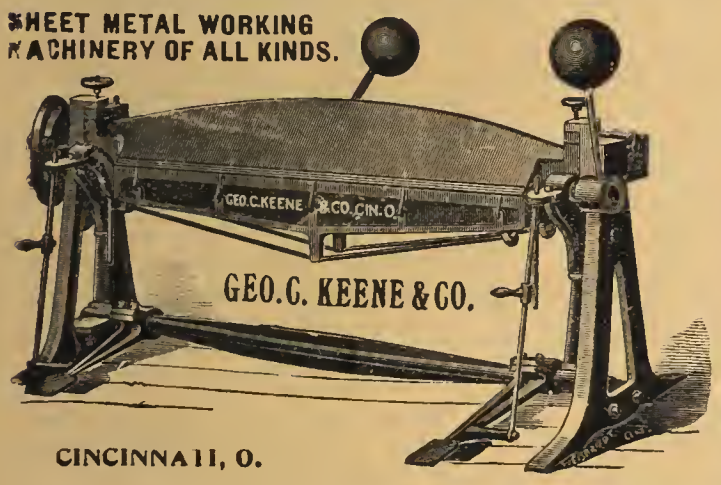

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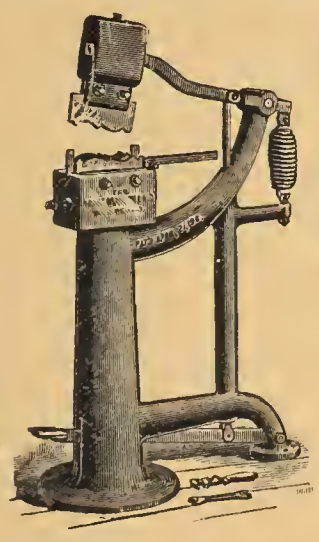

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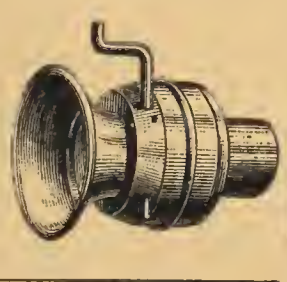

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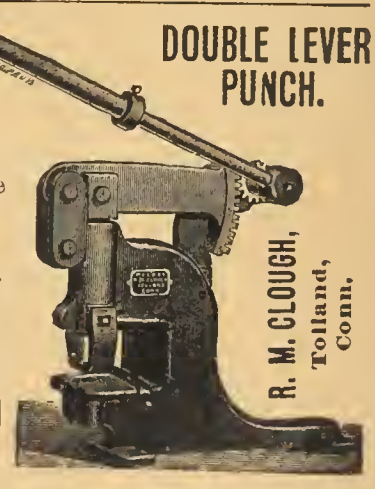

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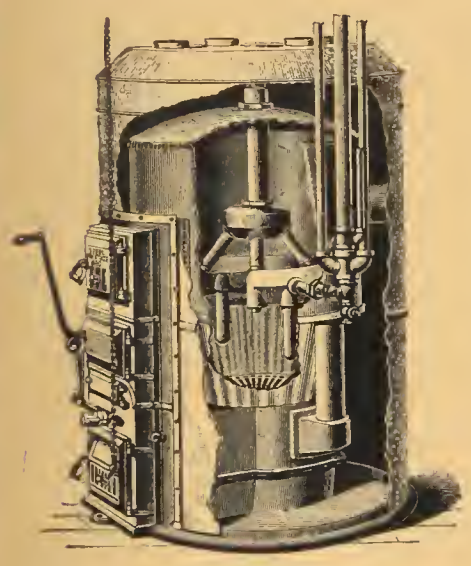

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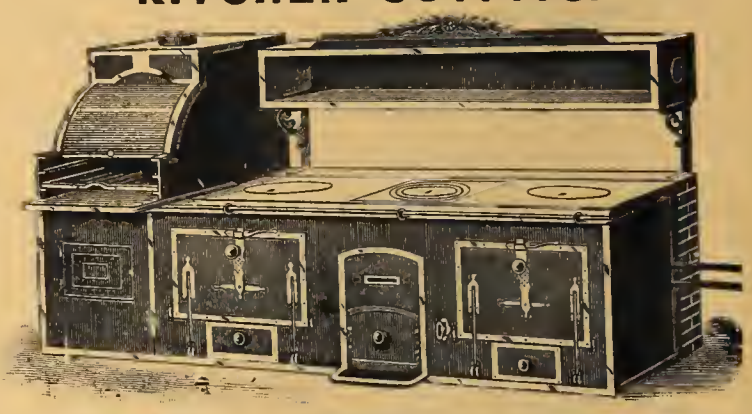

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Index to Reading Matter, Page 59.

Index to Advertisements, Pages 61 · 63.

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THE DIGHTON FURNACE Page 19.

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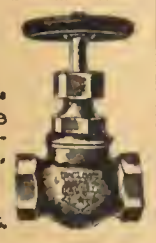

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READ OUR "AD" Page 17.
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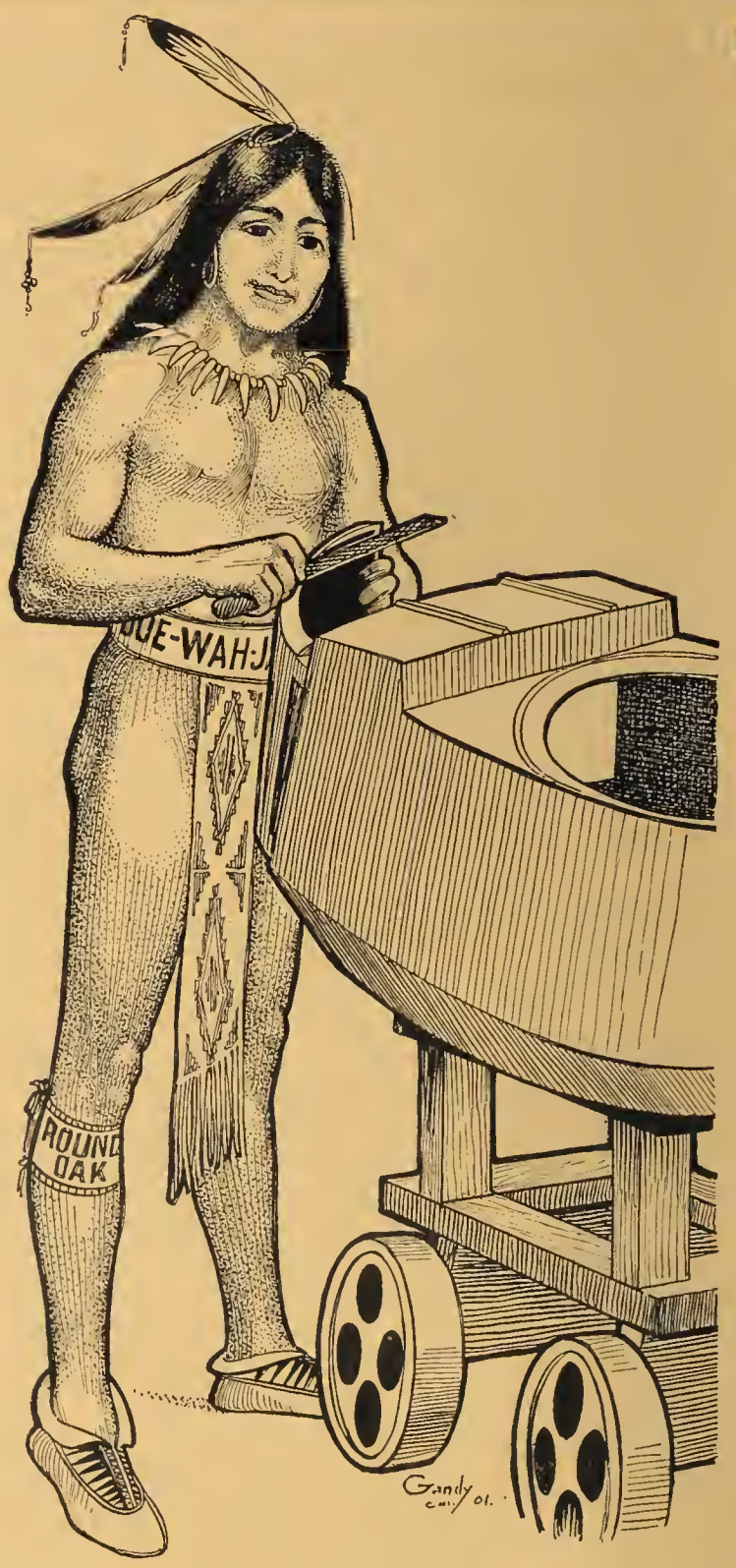

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For Steam and Warm Air,

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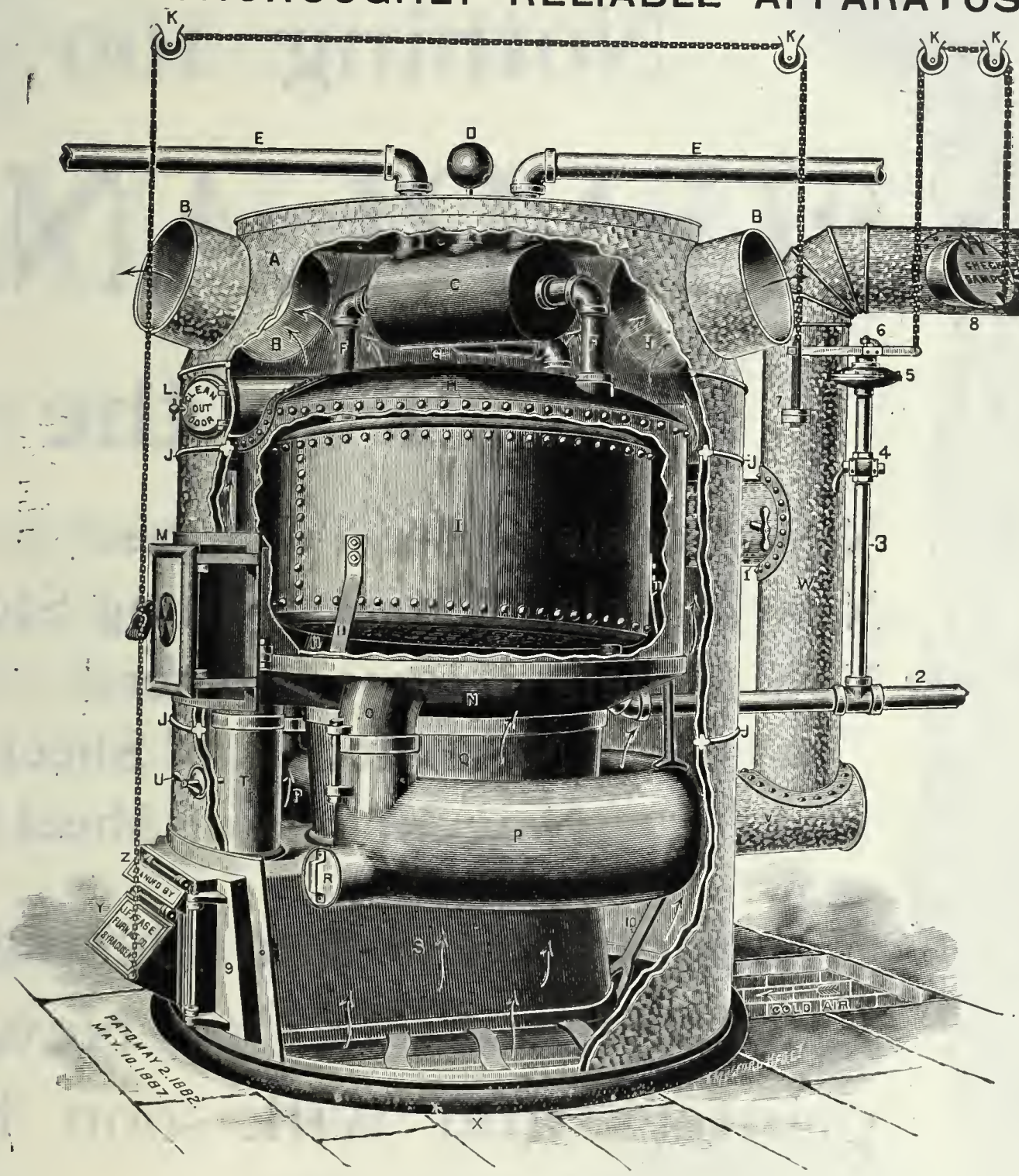

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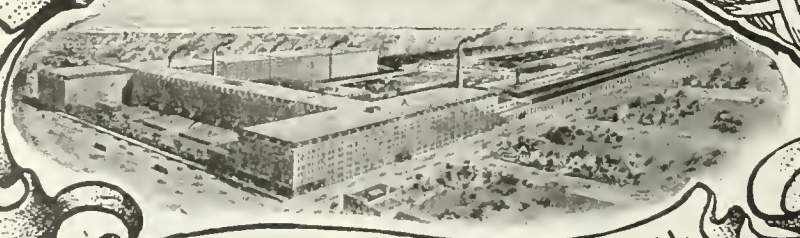
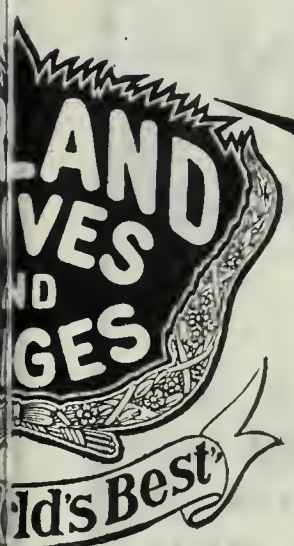


WORKS AT DETROIT, MICHIGAN.



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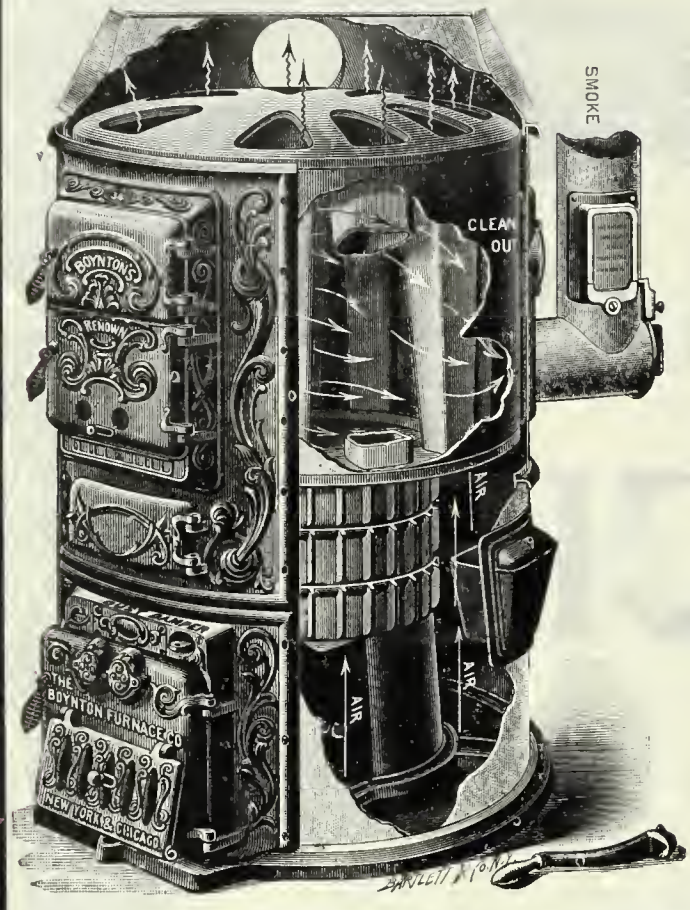
nd Ranges in the World.

GO. BUFFALO.

WESTERN HEADQUARTERS. CHICAGO.

BOYNTON'S "RENOWN"

PORTABLE FURNACE



A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The BOYNTON FURNACE CO.,

NEW YORK, CHICAGO.

1902 "RELIABLE" STEEL RANGES

Are Perfect in Every Detail.

We have added many valuable improvements for the coming season.

Place no orders until you see our line.

Write for Catalogue.

Made by

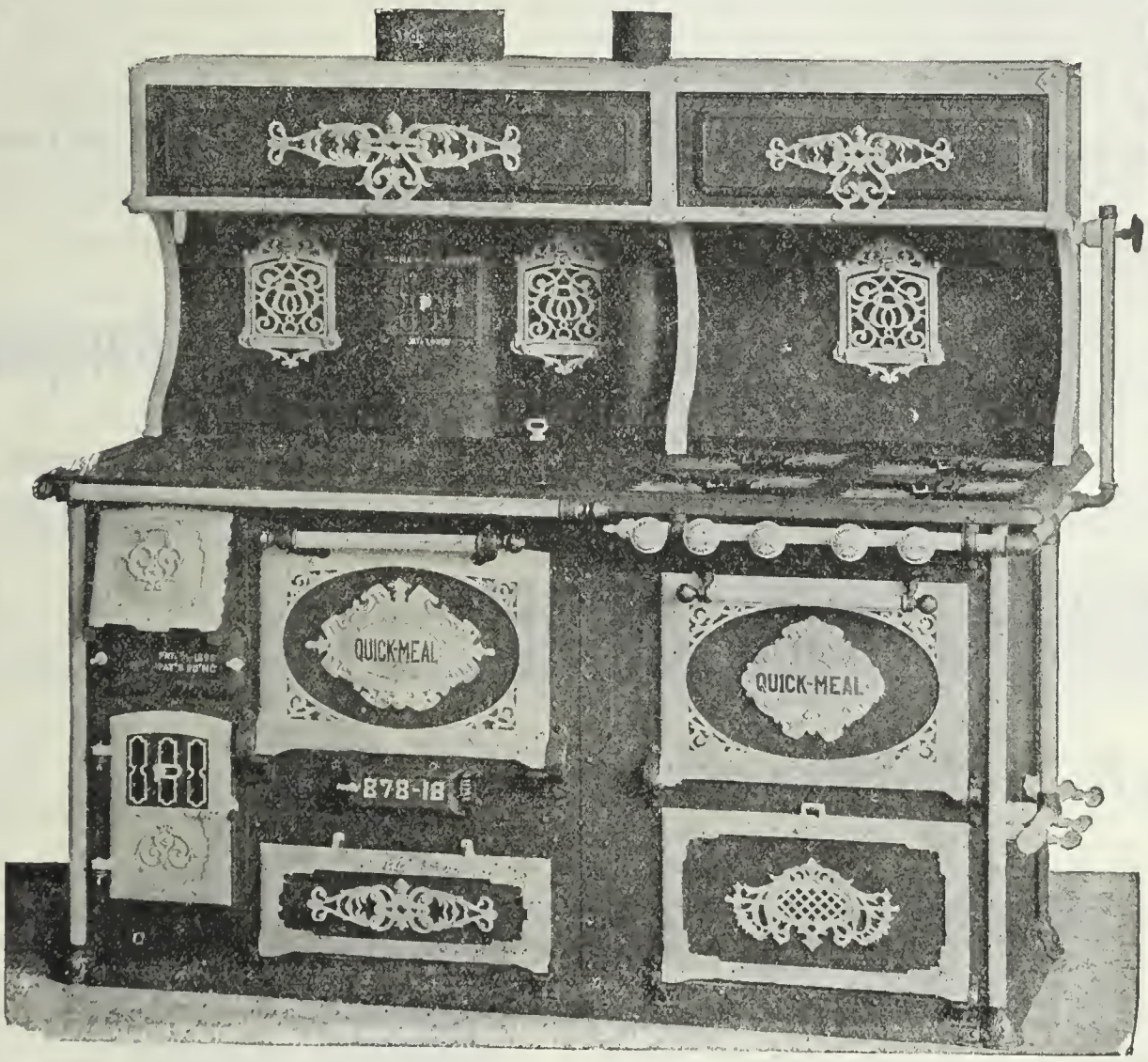
THE SCHNEIDER & TRENKAMP CO.,

Cleveland. Chicago.

QUICK MEAL

Grand Combination Steel Range

FOR COAL AND GAS.



"Quick Meal" Grand Combination Steel Ranges are built to economize space and to meet the demand for a Range that can be used with comfort both summer and winter. They are so arranged that either the Coal or Gas Range can be used separately or together. The **Material, Finish** and **Design** is the **best,** and is everything that a **first-class Range requires.**

There is nothing as handsome and nothing as well made.

RINGEN STOVE Co. SAINT LOUIS

MONARCH CINDERELLA

FOR HARD COAL.

In the Monarch Cinderella will be found one of the most perfect high grade, medium priced, base burning double heaters offered to the trade.

Every modern and desirable improvement is embodied in its construction. We believe the careful buyer will acknowledge that there is not a better stove in its class.

Every point has been studied to make it the best; and for ingenious, effective simplicity in construction it stands without a peer.

Best Workmanship, Best Materials, Silver Nickel.

We would be pleased to send our catalogues.

Pittsburgh Stove & Range Company,

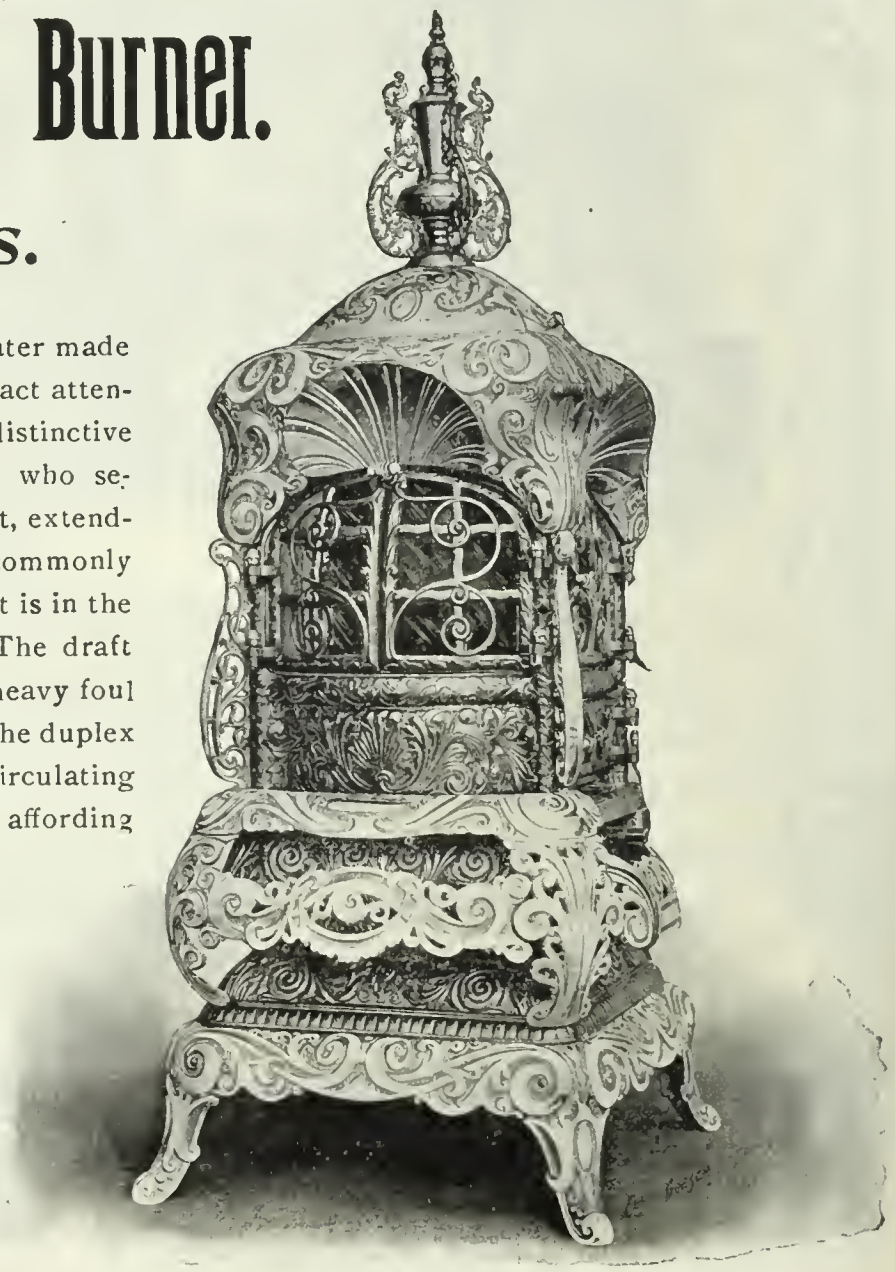
PITTSBURGH, PA.

WESTERN SALES AGENT, W. D. Sager, 38 and 40 Michigan St., Chicago, Ill.

The Monitor Base Burner.

High Art Series.

It is without doubt the most powerful heater made and its rich and graceful appearance will attract attention at once. The novel construction and distinctive features offer every advantage to the dealer who secures the agency. The diving flue is in front, extending entire width of stove, being what is commonly known as a sheet flue, thus the greatest heat is in the front of the stove where it is most needed. The draft is taken in through the bottom, carrying the heavy foul air which settles near the floor. Grate is of the duplex pattern with outer shaking ring. Two large circulating flues are fitted in rear corners of the stove, affording ample circulation for heating evenly the largest room. Send for new Catalog and secure the agency without delay.

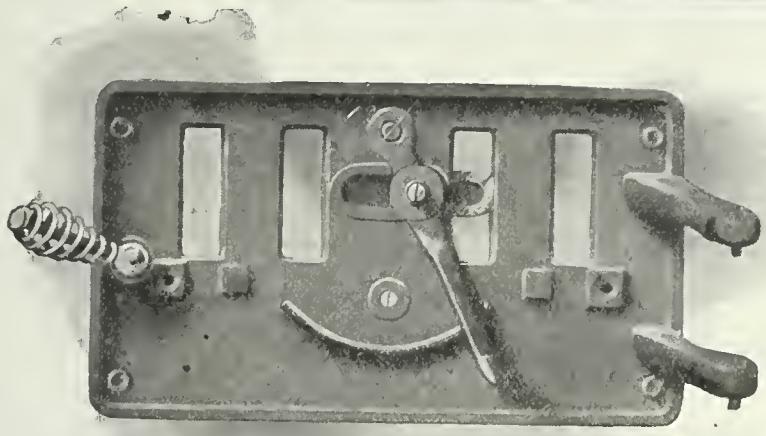


The Wm. Resor & Co.,

CINCINNATI, U. S. A.

Moore's Air-Tight Heater

The Air-Tightness of an Air-Tight Stove Consists in Its Being Air-Tight



The above simple fact is frequently lost sight of in the meaningless use of the word air-tight, loosely applied to many stoves regardless of the fit-ness of their joints. Much of the secret of the success of MOORE'S AIR-TIGHT HEATER lies in the perfection of the base door, all the joints being mechanically ground to within $\frac{1}{1000}$ of an inch of actual contact.

JOLIET STOVE WORKS

JOLIET, ILLINOIS

28

Model Oak

Entirely New Line for 1901.

We use the old name, but the numbers are different.

The Round Air Tight Register is ground into its seat on the inside of the ash pit door and will remain at any degree of opening required to supply air for combustion through the opening.

The register construction is such that the **Grate Handle** can be pulled out through the register opening

The Extension on Top of the Fire Pot extends up inside of the steel drum and is cast solid with the fire pot so it cannot twist and warp.

The Sectional Ring fits over the flange turned out on the bottom of the steel drum.

The Ash Pan fits tightly all around the edges of the ash pit.

The joints remain tight.

The price is just right.

Ask for more information.

MODEL OAK.

The Portsmouth Stove & Range Co.,

THE BUSIEST MAKERS OF STOVES & RANGES IN THE WORLD

Portsmouth, O.

MORLEY BROS.,
Saginaw, Mich.,

Agents for Michigan and the Northwest.

"Norman" Steel Range.

BUILT LIKE A WATCH.

ATTRACTIVE.

ECONOMICAL.

DURABLE.

In the "NORMAN" Range are embodied up-to-date features that sell stoves.

The Fire Box is Oval in Shape and of Goodly Dimensions.

Either Duplex or Dockash Grates can be used. Grates removable through end door without removing any fire box linings.

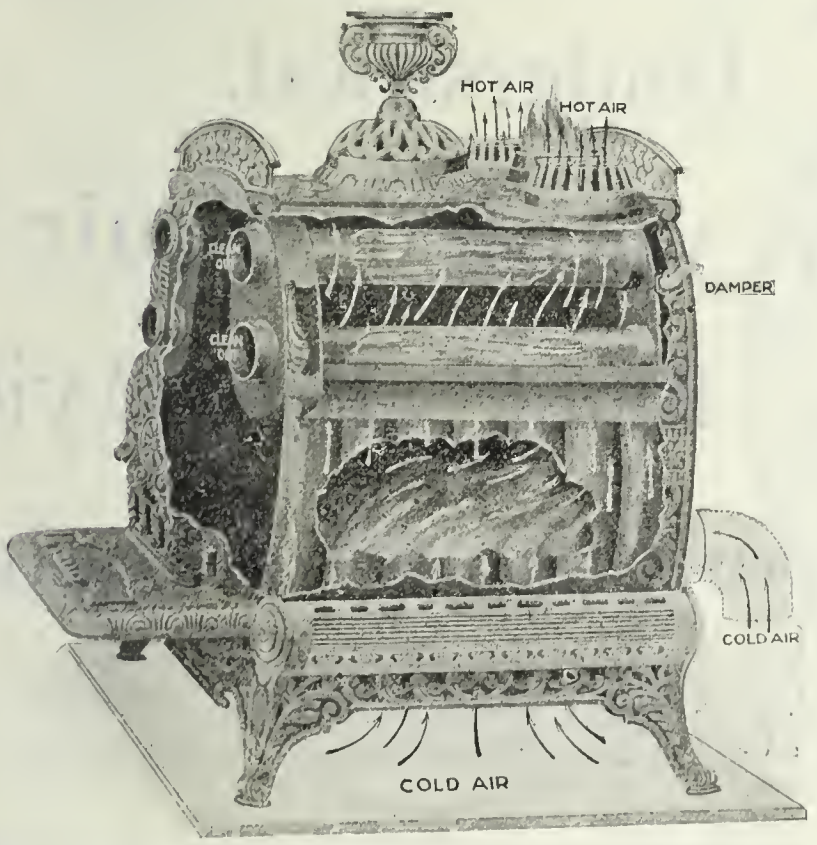
Send for Illustrated Catalogue descriptive of our full line of Steel and Cast Ranges and Heaters.

GALUSHA STOVE CO., Makers, - ROCHESTER, N. Y.

YUKON TRIPLE HEATER.

DIMENSIONS, ETC.

Length of Fire Box Ins.	Size of Fire Door Ins.	Height Over All Ins.	Length Over All Ins.	Width Over All Ins.	Approx. Ship'ng W'ght lbs.	Size of Hot Air Pipes Ins.	Size of Smoke Pipe Ins.
30	11 x 14½	48	42½	26	490	7	7



PRACTICALLY A SMALL FURNACE.

Has no Equal as a Heater in Canada or the United States.

As Powerful a Heater as a Small Furnace, and Much More Economical.

Burns rough wood 30 inches long.

Flues the same as a modern expensive furnace.

Cold air can be drawn from adjoining rooms, or outside if desired, by connecting pipe to collar at back of stove.

Heat travels three times the length of stove before entering stove pipe. (See cut.)

Will heat a moderate-sized house as well as a furnace, and at less cost.

Is indispensable to country schoolhouses, where fresh warm air is so essential.

Handsome enough to be placed in any parlor.

IN CANADA.

We would like to have dealers in every Town and village press the sale of this stove, because, when one or two are placed in a district, it sells easily.

We will be pleased to furnish advertising matter **FREE.**

IN THE UNITED STATES.

Such a stove is not on the market, and if some **live, enterprising manufacturer** wants to monopolize its sale in that country, we are prepared to sell Duplicate Iron Patterns of same.

Complete information regarding cost of manufacture, prices for duplicate patterns, etc., cheerfully furnished.

THE McCLARY MFG. CO.,

LONDON, CANADA.

BRANCHES: TORONTO, MONTREAL, WINNIPEG, VANCOUVER and ST. JOHN, N. B.

STOVE S

"AND some f
springin
thirty, and one

A MERCHANT
low in price th

(ONE OF THOSE NEW HIGH OVEN MODERN ACORN POLISHED STEEL RANGES) which

its merits had be
Understood.

The Acorn yielded Fruit a

(FOUR MORE ACORN STOVES SOLD IN THAT TOWNSHIP WITHIN ONE YEAR) the Black Bird yiel
bore Repairs, even though at the
almost sold Itself.

MORAL: *Easy come, easy gone*
Black Bird profit.

TORIES NUMBER FOUR.

ll on Good Ground and yielded Fruit,
g up and increasing; and one bore
sixty, and one a hundred fold."

old two stoves; the Black Bird, so
at it almost sold Itself, and the Acorn,
was sold with greater Profit after
en told, for he

d bore Sales;
ed Trouble and
eginning it had

OUR LABEL	RATHBONE, SARD & COMPANY "THE OLDEST AMERICAN STOVE-MAKERS" ALBANY DETROIT CHICAGO AURORA

An Acorn profit is better than a

CATALOGUES SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

AIR TIGHT HEATERS.

Our line in these comprises everything from the cheapest to the very finest finish possible to produce. Our manufacturing facilities and daily output justify us naming prices below any possible competition. This fact has enabled us to establish Wholesale Agencies in nearly every large city in the United States and makes it possible for us to supply the Dealer "Near His Door," saving time and freight. We also manufacture **Steel Ranges, Steel Cooks, Cast Ranges and Cooks, Hot Blast Coal Heaters, Oaks, Laundry Stoves, Radiators, etc**, all up-to-date goods.

Write us for particulars and we will put you in the way of making some money.

EXCELSIOR STOVE & MFG. CO., - Quincy, Ills.

THE

What Cheer Circulating Heater

Equivalent to a Furnace at a Fraction of the Cost.

Heats by circulating the hot air like a furnace. Will heat several rooms evenly. No cold corners. Takes up the cold air from the floor and heats it, leaving the floors warm.

Will do more and better heating with less fuel and less attention than other stoves.

SAVES ITS COST IN FUEL IN ONE SEASON.

Takes 28-inch wood. Keeps fire 48 hours. Is heavy, durable and tight.

We also make a very large, heavy circulating heater for Churches, School Rooms and Stores.

Highly commended by both dealers and users in all parts of the country.

Stock carried in our St. Paul Warehouse.
Write for Catalogue and Prices.

WHAT CHEER STOVE CO.

Office and Salesroom, 924 Raymond Avenue, St. Anthony Park, - St. Paul, Minn.

BRAND STOVE CO.

STOVES, RANGES and FURNACES.

SEND FOR CATALOG.

MILWAUKEE, WIS.

JEWEL STOVES AND RANGES..

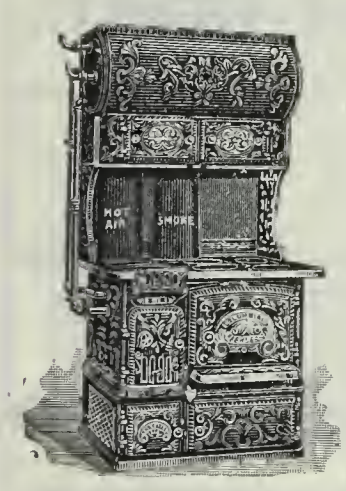
A Complete, Well Advertised Line; Low Prices and Good Workmanship.

Please Write for Catalogue.

DETROIT STOVE WORKS.

Detroit - Chicago.

DEALERS, BUILDERS AND OWNERS



COLUMBIAN LINES.

Should secure our Line of Goods. They will then have the Best on the Market.

The Columbian Banner, Comet, Prince and Climax Furnaces, and the Columbian Peerless, Victor, Newport, Star and Triumph Ranges are all substantial, efficient and economical.

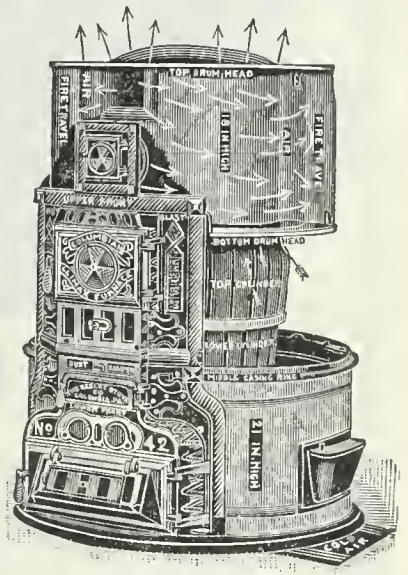
ALL KINDS OF WOOD AND COAL

Airtights, Base Burners, Globe and Cylinder Stoves, Gasolene and Oil Stoves.

Write us for full information and catalogues.

THE KEELEY STOVE CO.,

COLUMBIA, PA.



COLUMBIAN LINES.

STOP!

If you're looking for a Steel Range combining all the qualities which go to make an article of that kind desirable—

High Grade Materials and Workmanship,
Correct Construction, Operation Guaranteed,
Modern Design, Latest Improvements,
Low Price—you have it in the

Triumph Eclipse, New "D" Series.

THE BEST LINE OF LOW PRICED RANGES ON THE MARKET.

The Eclipse Stove Co., Mansfield, Ohio.

Repositories at St. Anthony Park, Minn.; Omaha, Neb.; Denver, Col.

Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

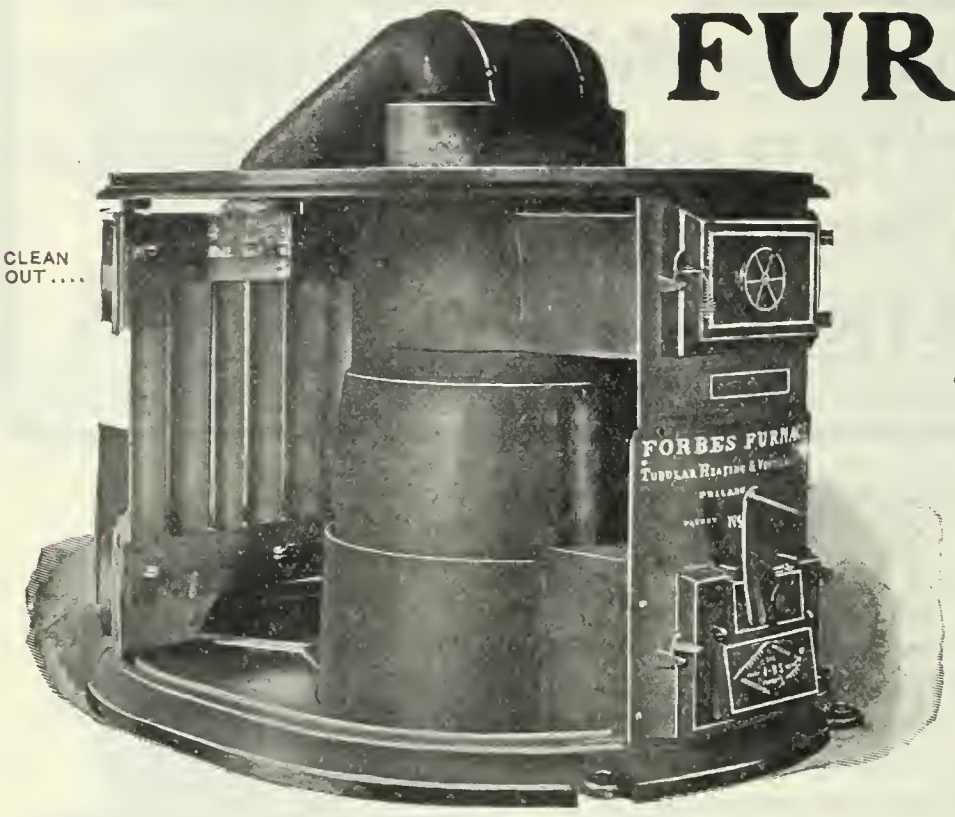
The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing.

SEND FOR CATALOGUE.

Bergstrom Bros't Co.

NEENAH, WIS.

FORBES (IMPROVED) WARM AIR FURNACE.



ONLY 4 FEET 3 INCHES HIGH.

Compact and Simple Construction.

Aluminum Tubes

IN RADIATOR
ARE RUST PROOF.

Triplex Grate.

PERFECT SHAKING. PERFECT DUMPING.

Each Bar can be separately replaced.

Forbes Furnaces Save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE AND PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

232 Quarry St., PHILADELPHIA, PA.

For Beauty, Simplicity, Convenience and Heating Power,

The Improved....

"NEW PROCESS"

AND

"IMPROVED" Standard OIL HEATERS

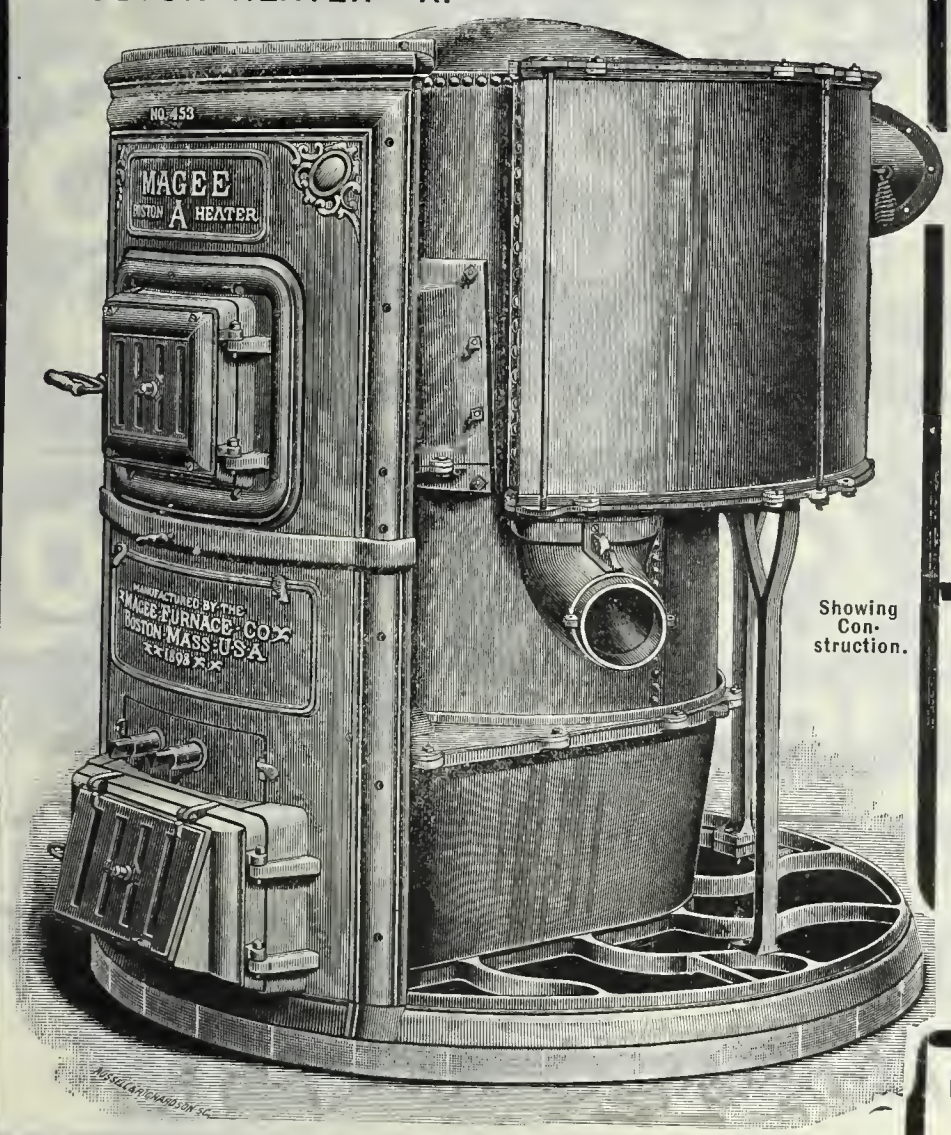
Excel all others.

You must order early if you expect to get heaters this year. Our jobbers have them.

BOOKLETS READY.

THE STANDARD LIGHTING CO., Cleveland, Ohio.

BOSTON HEATER "A."



Showing Construction.

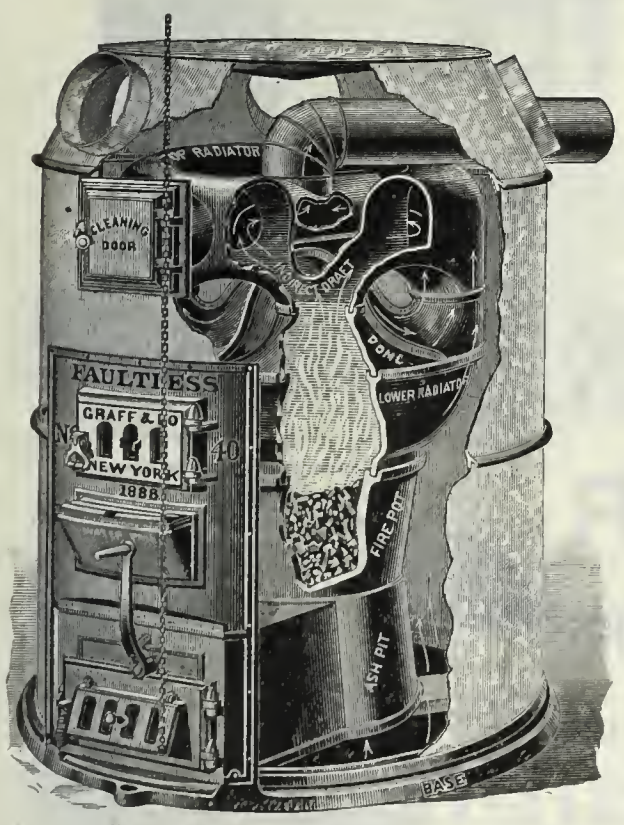
Where's the Man or Woman who has never heard of

Magee HEATERS ?

☞Cut shows one of the famous **MAGEE BOSTON HEATERS**—for warm air or warm air hot-water combination. They're built to wear. Gas-tight and dust-tight. Have brick lined fire pot—linings that last for years. "Dock-Ash" revolving grate. Furnace is easiest to take care of, furnishes uniform, steady fire, and heats greatest amount of space with given amount of fuel.

Magee Furnace Co.,
32-38 Union St., Boston.

FAULTLESS FOLKS ARE FEW



But our FAULTLESS Furnaces and Ranges are Many.

There are THOUSANDS of them in use, and are KNOWN EVERYWHERE as STRICTLY FIRST-CLASS.

They are NOT CHEAP, but GOOD! There may be others as good, but there can be NONE BETTER.

We make other grades also; suited to all requirements. Shall be pleased to have you investigate by getting our Catalogue and Prices.

THE GRAFF FURNACE CO.,

208 WATER STREET, - - - - NEW YORK.

Royal Heaters.

MANUFACTURED BY THE

HART & CROUSE Co.

UTICA, N.Y.

ALL THE LEADING LINES OF

STEAM, HOT WATER & HOT AIR,

FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST., N.Y.
COLUMBUS, O.

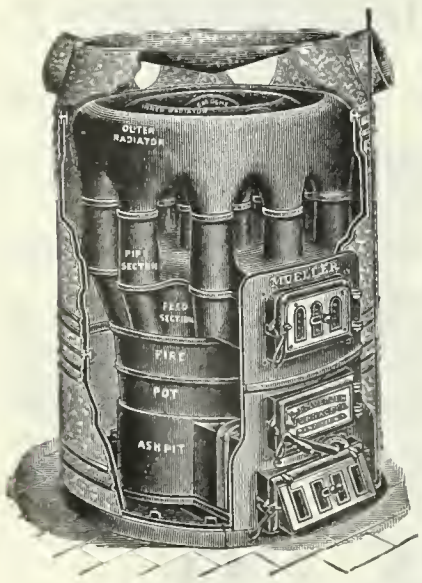
BRANCHES.

79 LAKE ST., CHICAGO,
ST. LOUIS.

WINCHESTER

How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.

HEATER.



MUELLER

— ON —

FURNACES and BOILERS

IS A GUARANTEE OF

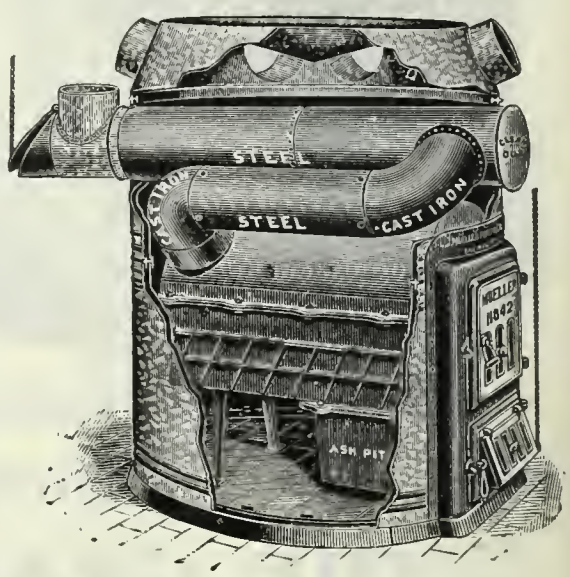
Durability, Economy and Satisfaction.

WHY NOT HANDLE THE BEST?

They cost no more, are easier sold and at a greater profit.

Write for our 1901 Catalogue and Prices.

GET OUR SPECIAL REGISTER OFFER.



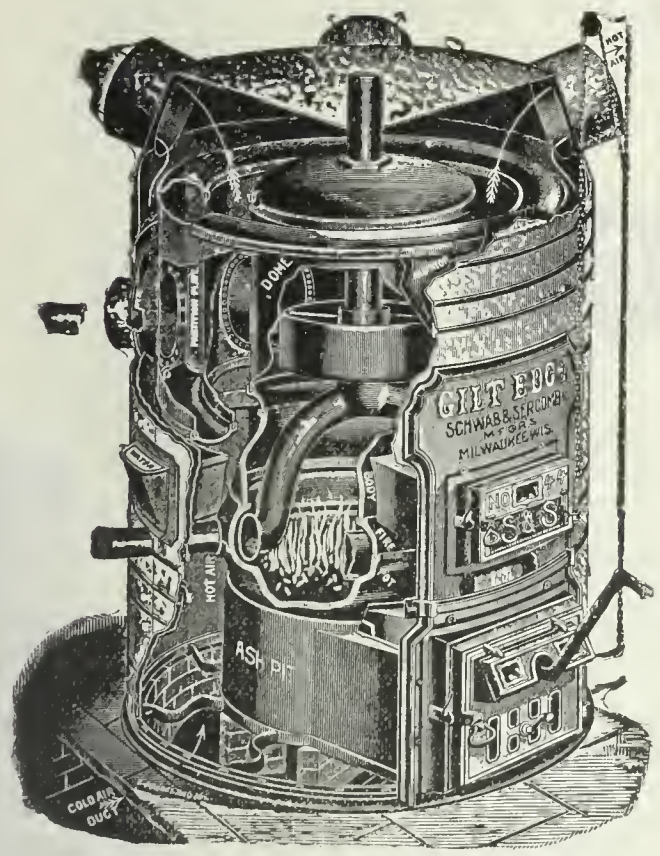
L. J. MUELLER FURNACE CO., 190 Reed Street, MILWAUKEE, WIS.

ANY DEALER who has ever sold the "DIGHTON" will tell you he has had less complaint than from an equal number of any other Furnaces he may have sold.

A 20-inch pot "DIGHTON" will do as much work as most other Furnaces having a 22-inch pot, and nine times out of ten your customer will say, "It requires less fuel than any other Furnace he has ever used."

If possible, set your first "DIGHTON" where some other Furnace has not done what it was intended to do. Don't use any larger size pot "DIGHTON" than what is in the old Furnace you remove, and guarantee better results with less fuel than the old one ever gave.

DIGHTON FURNACE CO., Taunton, Mass.



UTILIZED radiating surface, that is economy Sectional fire pots from 1 in. to 2 in. thick and other parts in proportion, that is durability. Positive gas-tight joints, that is necessary to health. These, with all other improvements for ease of management, are combined in the Gilt Edge Furnaces. They are made for all kinds of fuel, and are the very best.

Write for Catalogue and Prices to

R. J. SCHWAB & SONS CO.,

Mfrs.

MILWAUKEE, WIS.

E. E. DUNNING, Mgr. Furnace Dept.

KEEP UP WITH THE PROCESSION.

CONTRACTORS USING OUR BOILERS

Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

If this interests you drop us a line and receive our NEW Catalogues and Prices.

KEWANEE BOILER COMPANY

Home Office and Factory,

Chicago Store, 169 Lake St.

KEWANEE, ILLINOIS.

OAK ANDES DIRECT DRAFT.

OAK A

unquestionably the most practical a
to the trade in the form of an C

Like all the Andes Stoves a
material, and in the most thorough
leaving our factory.

For 1901.

This premier Oak construction is made with and without oven in top.

Double Register in Ash Pan Door, Operated by One Handle.

Boiler hole in bottom of oven.

Triangular Grate.

Perforated Mica

New Design.

Perfect Fitting.

Heavy Castings.

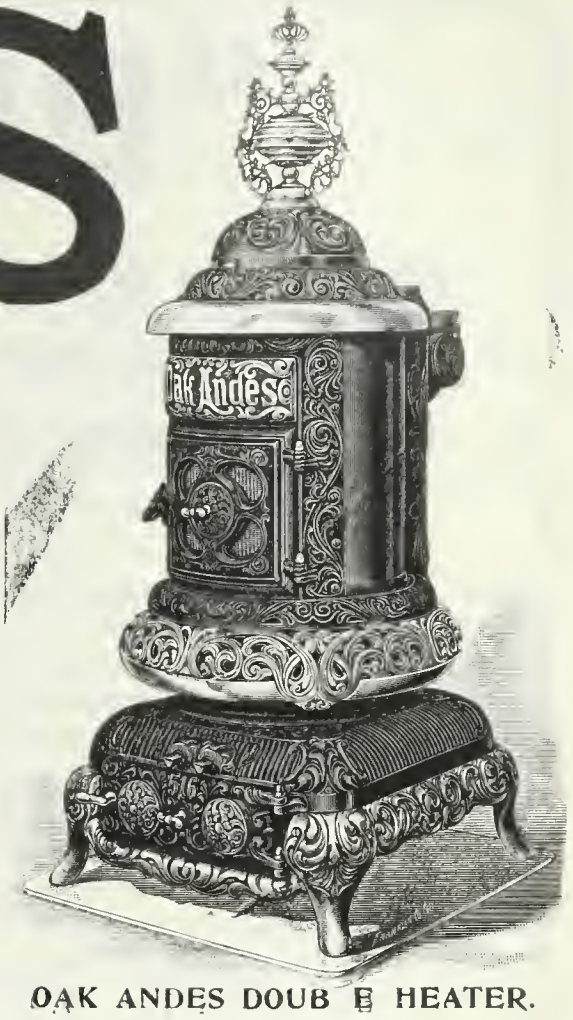
OAK ANDES

Phillips & Clark

COOK & VAN EVERA C

ANDES

attractive construction ever presented
Stove.
Ranges, it is made of the very best
nner, and is carefully inspected before



OAK ANDES DOUB E HEATER.

TIBLE FLUE.

The Leader.

For Hard Coal. For Soft Coal. For Wood.

The variation in styles in which we furnish this stove enables the dealer to meet all competition in quality or price with but the single line of Oaks made under one name.

Its merits are fully understood and highly appreciated by the trade everywhere and nothing can be done to improve it in external appearance.

tove Co., Geneva, N.Y.

38=40 Lake St., Chicago.

"BRAINS"

"Profiting by the Brains of others without giving a fair return is a questionable way of making a living."

MR. DEALER:—In a clear and frank manner, we desire to bring to your notice the open infringement of our Drying Machines that are being exploited by certain reputable (?) concerns, and to ask you, pending the settlement of our claims by due process of law, to give to us the consideration we trust is due us as originators and patentees And while the law holds **that the trader in an infringed article is liable,** we are not going to "throw that into you," but we **are** going to ask **fair play** and we think you will give it.

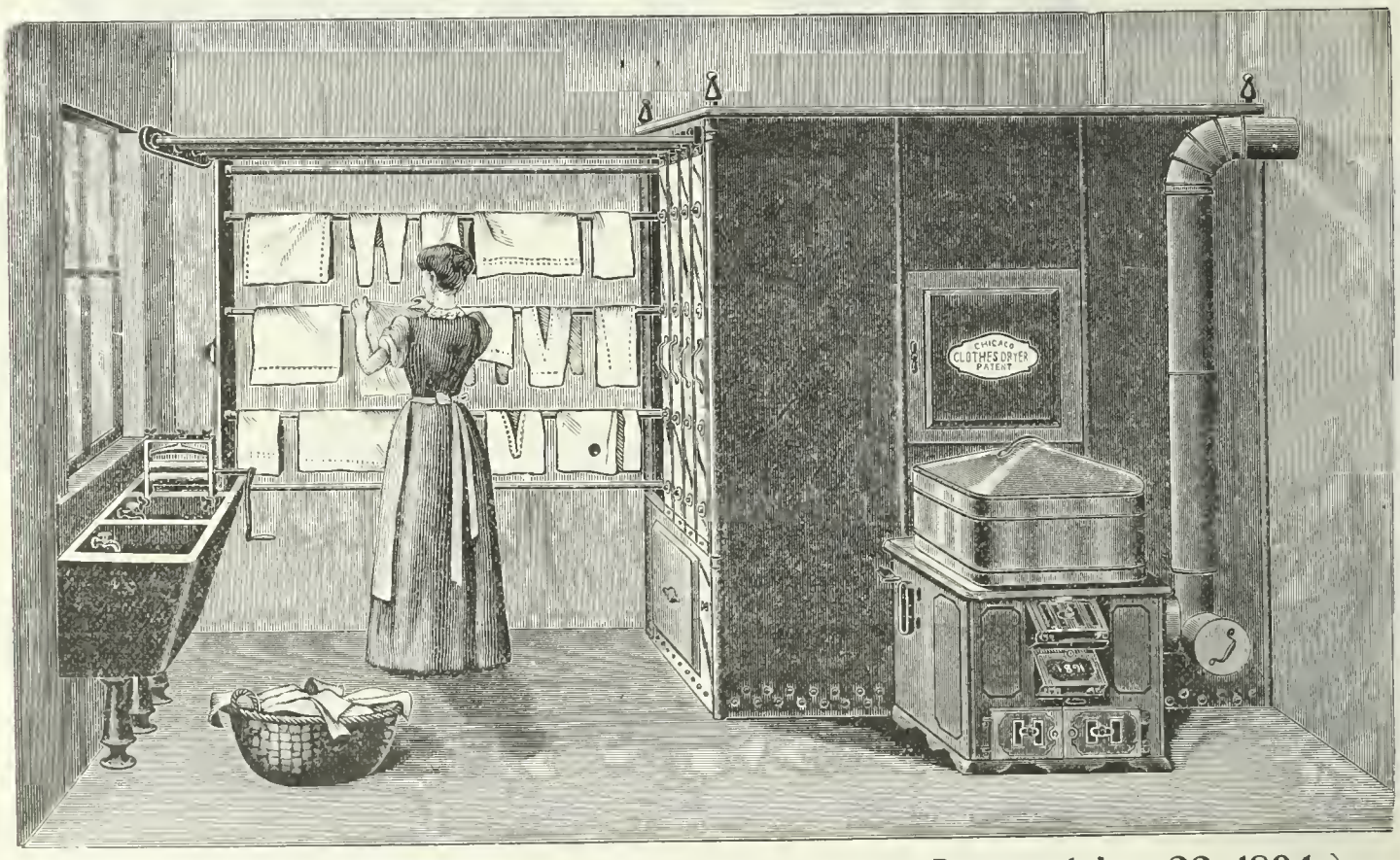
We will state, however, incidentally, that we are going to make our infringing friends **sweat** for their audacity.

We make Dryers of any size and to fulfill any requirements; Dryers small enough to be placed in the smallest kitchen or laundry room, or large enough to fulfill the requirements of the most extensive institution.

We make machines heated by Laundry Stoves (as per cut), or machines heated by Hot Water—Steam—Gas—Electricity

We fulfill **any** specification, and, as we have two large factories situated in New York and Chicago, we are in a position to fulfill any order promptly and at lowest possible price.

We have a nice illustrated catalogue and would thank you to send for same. Let us hear from you.



(Patented Feb. 23, 1886.) (Patented Jan. 23, 1894.)

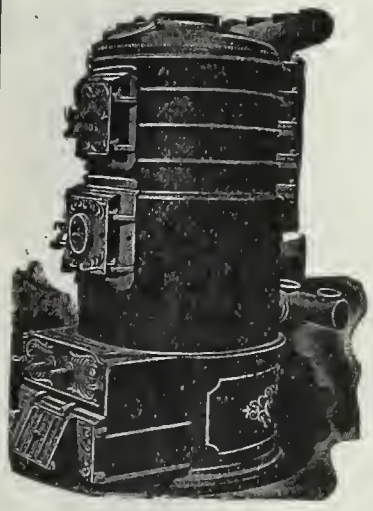
(COMBINED DRYER AND LAUNDRY STOVE.)

Chicago Clothes Dryer Works,

114 to 120 W. 30th St., NEW YORK.

65 South Canal St., CHICAGO.

FOR EVERY SITUATION.



You know how it is. Many people can be satisfied with an ordinary heater. But now and then you run across a man who positively will not buy until he is thoroughly convinced that he is getting the best possible heater for the money.

Such a situation requires a

"GURNEY" HEATER,

because you can then assure him that it's impossible to buy any heater that is more durable, more efficient, or more economical to operate than the "Gurney."

And now: If the "Gurney" is good enough for such a situation it's the most desirable for every situation, especially ***since it costs no more than many of the less efficient heaters.*** Make it a practice to use the "Gurney" in all your work.

Gurney Heater Mfg. Co., 74 FRANKLIN ST., BOSTON.
111 FIFTH AVE., NEW YORK CITY.

Western Selling Agents, JAS. B. CLOW & SONS, - - - 222 to 224 Lake St., CHICAGO, ILL.

BENGAL FURNACES.

SIMPLE, ECONOMICAL. PRACTICAL.

ALL CAST IRON.

MAKE DOLLARS FOR YOU, AND
SAVE DOLLARS FOR YOUR CUSTOMER.

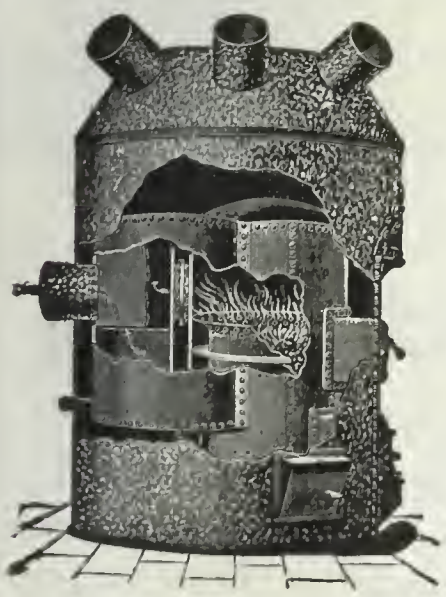
MORE RADIATING SURFACE THAN
ANY OTHER FURNACE THEIR SIZE.

Secure a BENGAL AGENCY at once.

WRITE FOR CATALOGUE AND FULL INFORMATION.

Eastern Selling Agents,
GURNEY & CO.,
Washington, Hanover & Elm Sts.,
Boston, Mass.

FLOYD, WELLS & CO.
ROYERSFORD, PA.



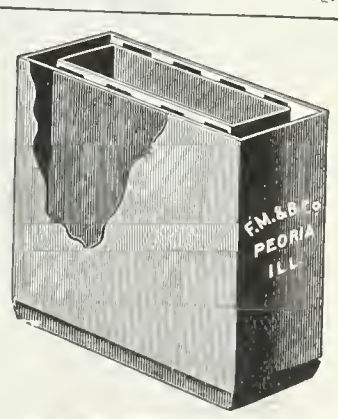
WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,
1300-1304 S. Washington St.,
SEND FOR CATALOGUE. PEORIA, ILLS.



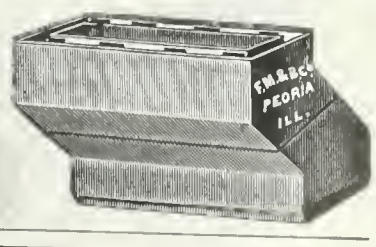
"The Handy Furnace Pipe."

MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,
SEND FOR CATALOGUE. PEORIA, ILLS.



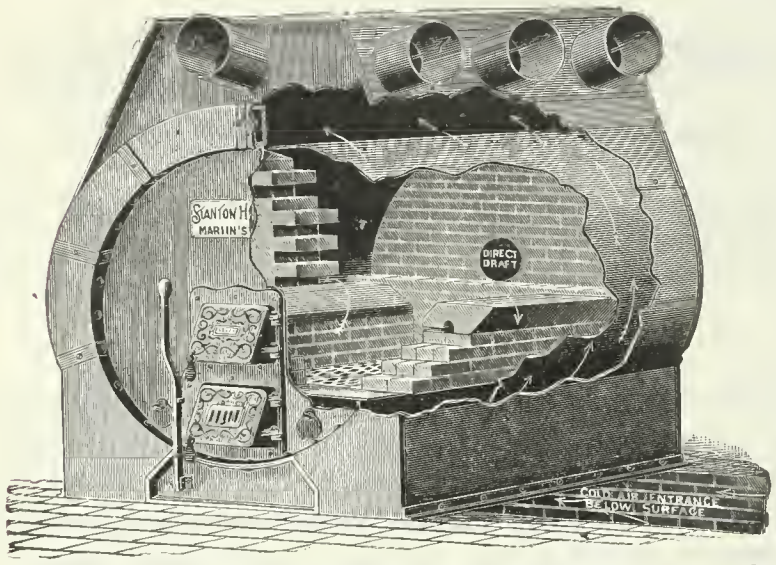
Gurney

HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES *and* STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

GURNEY AND COMPANY
WASHINGTON, HANOVER AND ELM STREETS
BOSTON, - MASSACHUSETTS

The Stanton Seamless Heater,

PORTABLE CASED.



STATE COLLEGE, PA., May 30th, 1901.

THE STANTON HEATER CO.,
MARTINS FERRY, OHIO.

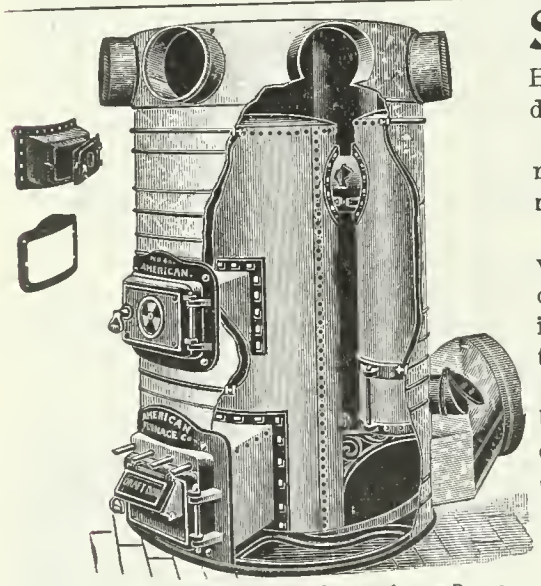
GENTLEMEN: We are very much pleased with the result of last season's work. We have sold and installed to date 43 Stanton Furnaces, and are pleased to state that every one of this number is satisfactory. We have come in contact with all kinds of conditions and buildings that parties could not heat with the various different makes of sectional cast iron Furnaces. These conditions have all been met with the Stanton Furnace full and adequate, and every Stanton Furnace will warrant the highest testimonial as to its merits. We realize that the Stanton Furnace is the best warm-air Furnace in existence at the present time, as all manufactured articles are judged from their natural product of the past, and we must credit them according to the service which they have rendered to the users.

We did not make any special effort to sell the Stanton Furnace, as this was our first season on it and we wanted to learn just what could be done with the Stanton, and whether it would prove itself superior to all other Furnaces as per your statement. We are now able to corroborate the statements and bold assertions made to us by your general salesman, Mr. P. E. Cash, at the beginning of the Furnace year, July 17th, 1900. He did not overrate the Furnace as we believed he had at the time he started us on the Stanton Furnace. We are now satisfied that we made no mistake by representing the Stanton Furnace to the general wants of the public, knowing that we are selling an article that is unlike anything of the kind on the market, and a device that is not in competition with the sectional cast iron Furnaces.

Yours truly,
J. N. & S. KRUMRINE.

This is the type of Furnace installed in the Glessner residence and illustrated in this issue of *The Metal Worker*. Send for Catalogue of the Best Heating Furnace on the Market.

THE STANTON HEATER COMPANY, Martins Ferry, Ohio.



Burn Hard or Soft Coal, or Coke. Large Doors.

Some Ripe Experience

Has come to us through watching the doings of dealers throughout the United States.

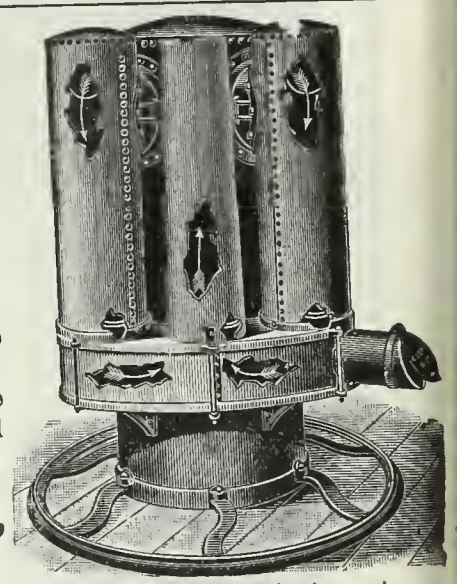
We find that the dealer who sells cheap furnaces not only loses ground in the furnace business but also has a falling off in his other lines.

On the other hand we can say that the man who sells a good furnace and charges enough to do a good job will, in a few years, be the leading furnace man in his town and at the same time build up his other business.

The ***American Furnace*** is made for the better class of trade; is durable, clean and economical in fuel.

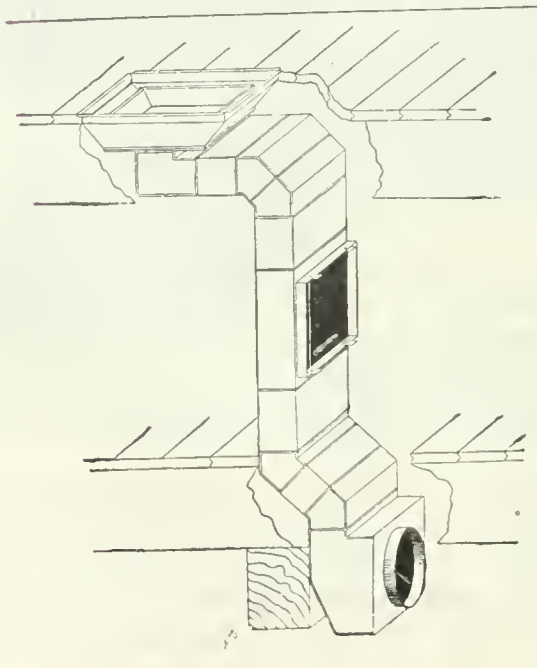
The American Furnace Co.,

1911-13 PINE STREET, ST. LOUIS, MO.



Large Radiators, easy to clean out

Write for prices and secure the agency before the other fellow gets it



After Six O'clock To-night,

OR ANY OTHER NIGHT,

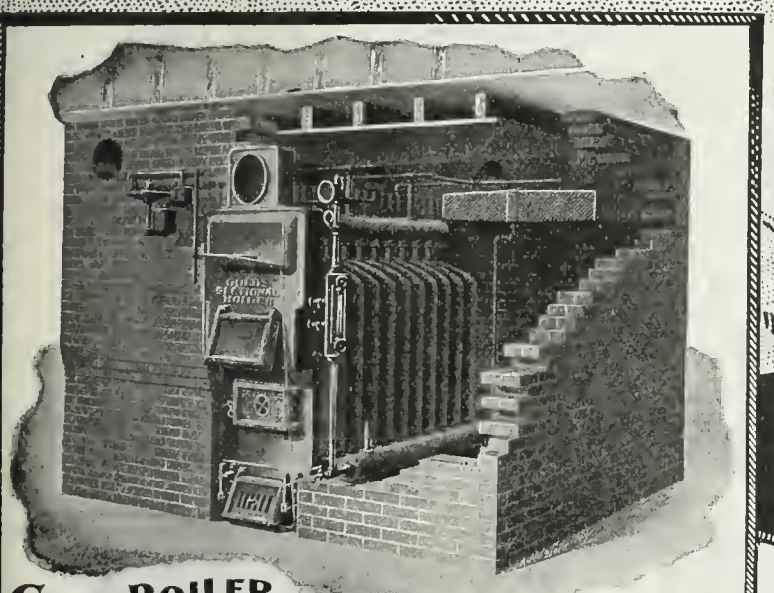
We are prepared to furnish you with hot air wall pipes, not only as good, ***but better,*** than any other furnace pipe on the market, and to substantiate our claim will mail catalogue and ship sample for comparison, and the ***price is right,*** too.

SAFETY FURNACE PIPE CO.,

Nos. 11 and 13 East Atwater St., DETROIT, MICH.

THE H.B. SMITH CO.

WESTFIELD, MASS.



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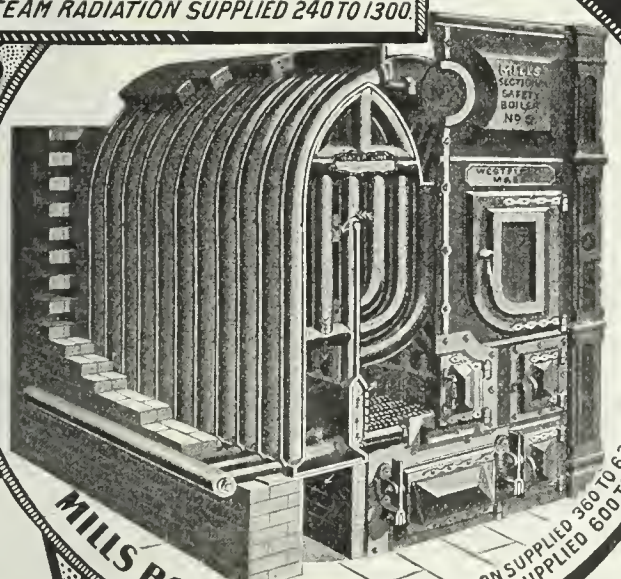
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

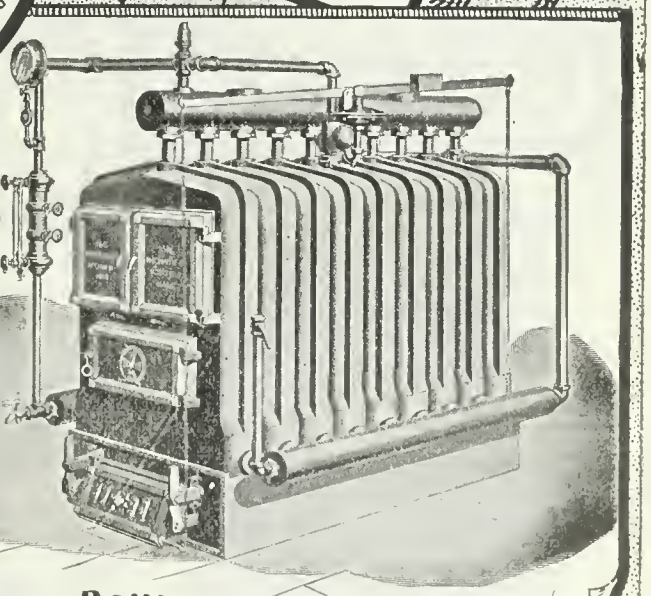
EUROPEAN AGENT,
AUG. EGGERS
BREMEN AND NEW YORK CITY.

COTTAGE BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 100 TO 550.

PACIFIC COAST AGENTS,
DUGAN BROS.
SAN FRANCISCO CAL.



MILLS BOILER, SQ. FEET STEAM RADIATION SUPPLIED 360 TO 6250.
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



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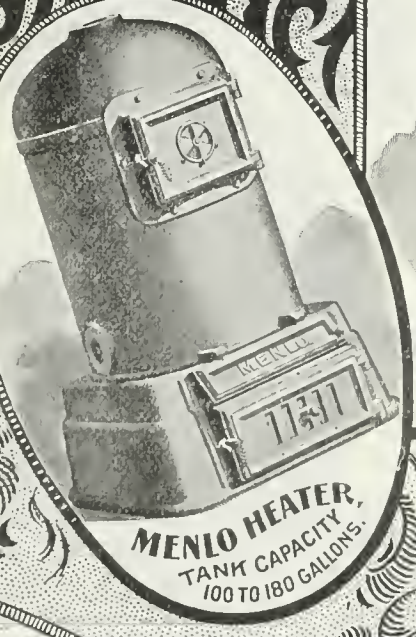

MENLO HEATER,
TANK CAPACITY 100 TO 180 GALLONS.

Western Agents
WESTERN BRASS M'F'G CO.
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SALESROOMS:
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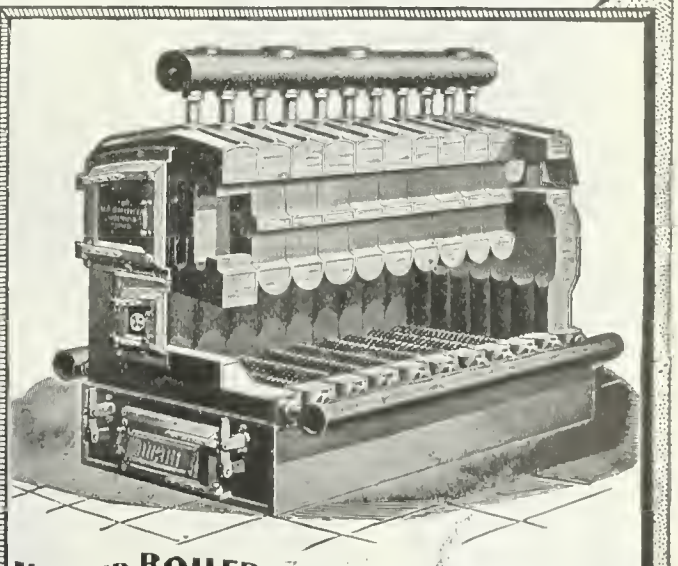

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HOT WATER AND HOT AIR

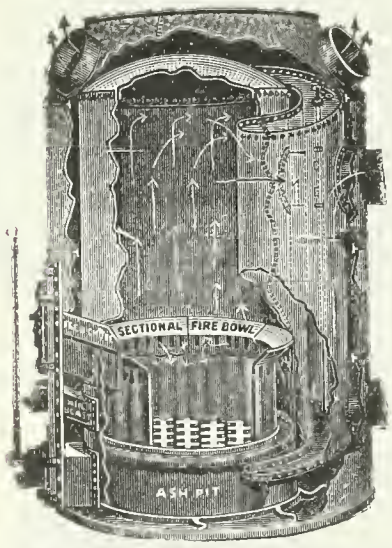
HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation Is Positive.
No Joints inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

THE LENNOX



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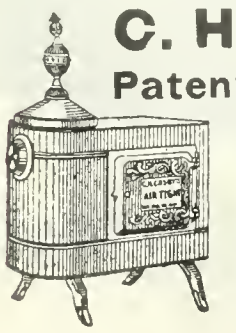
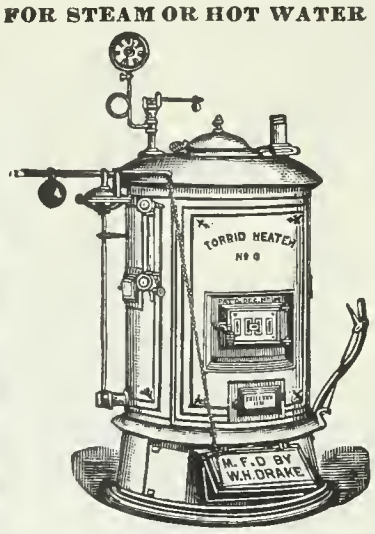
MADE BY
THE LENNOX MACHINE COMPANY
East Fredrick St., Marshalltown, Iowa.
CATALOG FREE

C. H. Cosby's
Patent Air Tight Baker and Heater.



Agents wanted in every town and city.
Write for particulars.
C. H. COSBY,
423 W. Broad,
Richmond, Va.

"TORRID HEATER."
FOR STEAM OR HOT WATER



It is Practical in Design.
It is Safe, Being Tested to 200 Pounds.
It is Easy to Manage and Keep Clean.
It is Durable.
It is Sectional and Easily Handled.
It has No Packed Joints.
It is Self-Feed or Surface Burning.
It has the Torrid Patent Rocking and Dumping Grate.
It is Low in Price.

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MANUFACTURED BY
W. H. DRAKE, No. 36 Clinton St., NEWARK, N. J.
Factory: Hackettstown, N. J.

KINEO FURNACES
FOR WOOD.

The Kineo Furnaces are built to secure durability and heating qualities. The smoke enters the radiators on the back and passes entirely around the radiator before entering the chimney, making them the most powerful heaters known. Also manufactured in two sizes with steel radiators.

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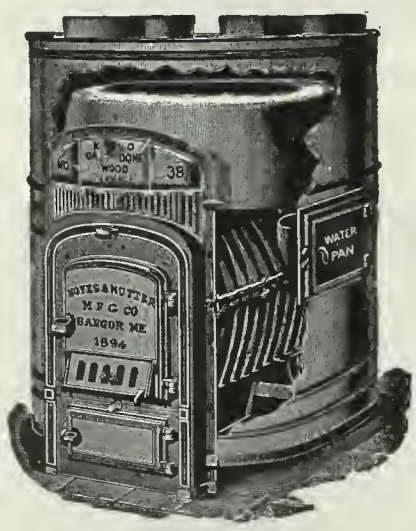

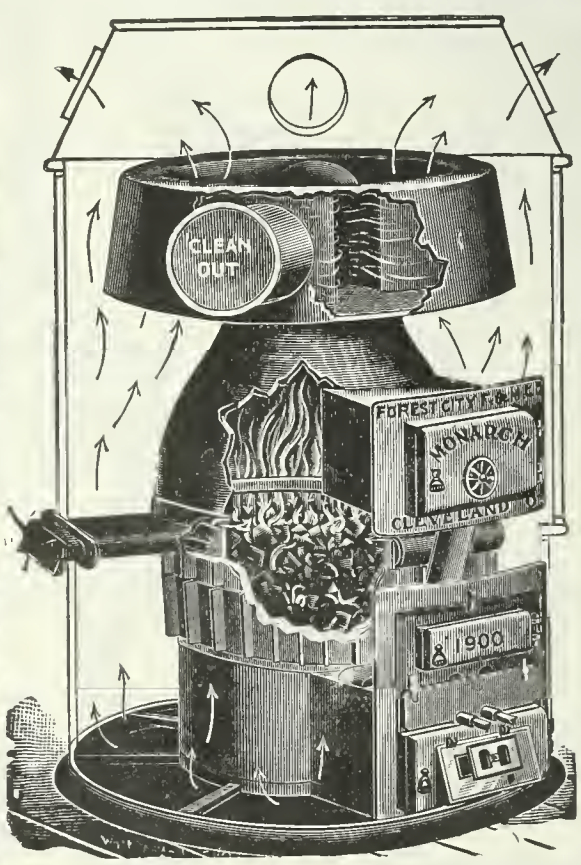

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All Cast Iron. For Hard and Soft Coal. At Foundry Prices to Large Buyers.

Inquiries Solicited.

OUR NEW CATALOGUE JUST OUT.

The Forest City Foundry and Mfg. Co.
81 Elm Street,
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Gray Iron Castings to order. High grade only.

Vance Boilers.

The most economical Steam and Hot Water Boiler on the market. Write for Catalogue and Price List.

VANCE BOILER WORKS,
373 Atkinson St., Geneva, N. Y.

STAMFORD FOUNDRY COMPANY

MAKERS OF

RANGES COOKING AND HEATING STOVES

HOT-AIR AND COMBINATION AIR AND

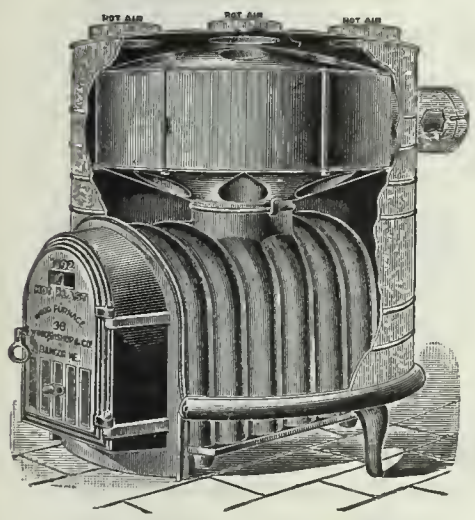
WATER FURNACES

LAUNDRY STOVES CONFECTIONERS' STOVES

CABOOSE RANGES ETC ETC

STAMFORD CONN

WOOD FURNACES.



THE HOT BLAST.

Established 1839. Incorporated 1894.

OUR IMPROVED MONITOR.

The most powerful heater made.

2 SIZES, PORTABLE OR BRICK SET.

No. 38 for 3 ft. wood. No. 50 for 4 ft. wood.

OUR LOW PRICED HOT BLAST.

The most practical, durable heater on the market at anywhere near its cost.

FIRE BOX BODY made in one piece, corrugated, is very heavy and cannot break or warp.

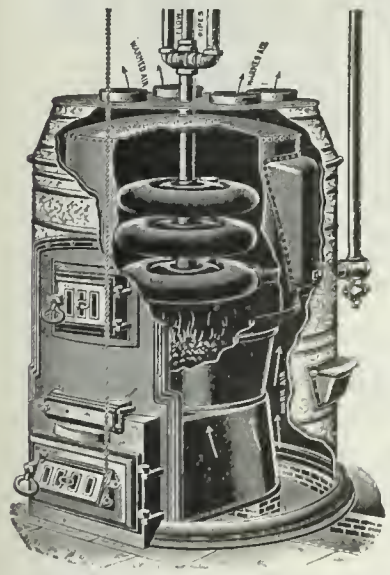
RADIATOR with heavy cast iron heads, heavy plate iron shell and hot air flues, has extra large radiating surface and is self cleaning. Every part of radiating surface is directly exposed to fire, allowing no possibility of creosote in the apparatus. No wood grate. Fuel burns on the ashes in the only practical, economical way.

3 SIZES, PORTABLE OR BRICK SET.

Nos. 36, 42 and 48, for 3, 3½ and 4 ft. wood.

Thousands in use in all sections of the country.
Testimonials and full particulars sent on application to the manufacturers.

WOOD & BISHOP CO., BANGOR, MAINE.

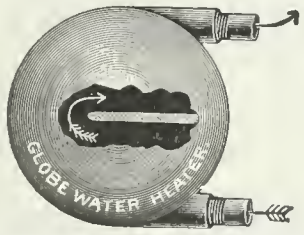


The Champion Hot Water Combination Boilers.

They Fit Any Furnace.

Base Section With Rings Attached.

One or more ring sections can be added for additional capacity to be determined by the amount of hot water radiation to be used. These boilers are made in sizes to fit any style of hot air furnace and have a **capacity of from 100 to 600 square feet radiation.**

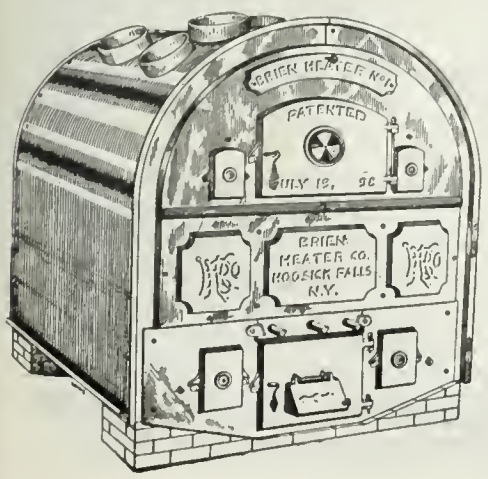


Globe Water Heater, attached to furnace will heat water in kitchen boiler for domestic use.

Write for new circular. Manufactured by

FRANK D. STOLZ,

115 Lake St., - - - Chicago, Ill.



Brien Heater.

A perfect, all cast WOOD or COAL burner. There is no other Hot Air Furnace as low down as the "BRIEN."

Write for territory, catalog and prices.

BRIEN HEATER CO.,

HOOSICK FALLS, N. Y.

Pierce Boilers Perfect Burners

For Steam and Water Heating.

Florida Steam Boiler.

Pierce Steam and Water Boilers are unequaled for economy of fuel consumption, combined with large heating capacity.

GREATEST VARIETY OF SIZES AND STYLES.

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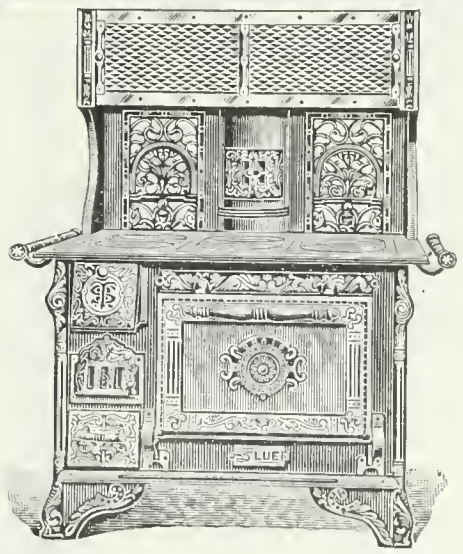
46-48 E. 20th St.	50 Oliver St.	24 So. 7th St.



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We are pioneers in steel range business; old in experience yet adopt modern up-to-date methods. Write for our catalog.

Tinnerman Steel Range Co.,

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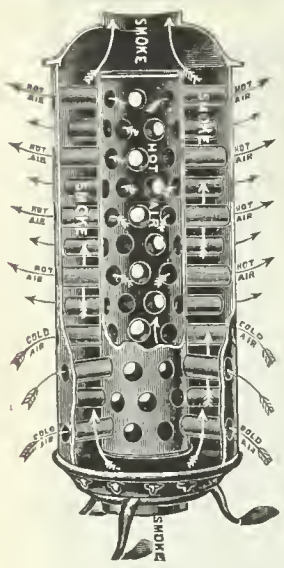
— How It Was.—Jack: "I hear you lost a lot of money on Wall Street while you were drunk."

Tom: "I wasn't drunk, but the stocks I bought took a drop too much."—*Boston Journal.*



4,866 sq. ins.

SAVES 1/2 THE FUEL.

The "ROCHESTER" Radiator.

FOR USE ON FURNACES AND STOVES.

Manufactured ONLY by the Rochester Radiator Co.

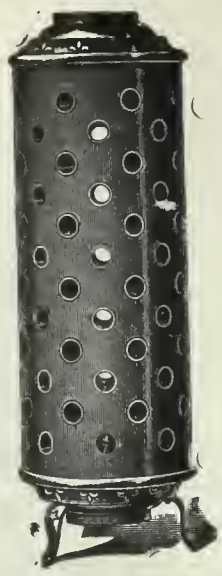
Made in 12 Styles, and Retails from $2.00 up.

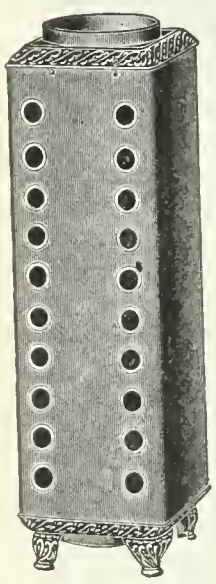
Do not be misled by other makes sold as

The "Rochester."

ROCHESTER RADIATOR CO.,

100 Furnace St., ROCHESTER, N. Y.





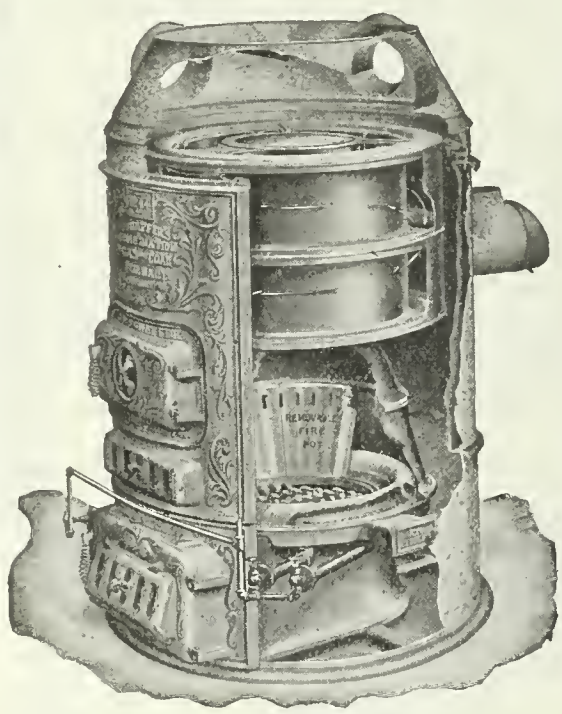
INDEPENDENT SQUARE Stove Pipe RADIATORS.

Will heat a room without the cost of a single penny for fuel. They don't clog up. A postal request brings full information.

Independent Register Co.,

152 Champlain St., = CLEVELAND, OHIO.

Schaffer's Combination Gas and Coal Furnace.



The Most Economical and Durable Gas Furnace On the Market.

It will heat a house as cheaply with Gas as with Hard Coal, and is so arranged that the change from one fuel to the other can be made in a few minutes, without removing the burner or grate, or disconnecting the gas piping.

Absolutely No Condensation.

For Catalogue and Price List, write to

JOHN P. SCHAFFER,

18 WOOD ST.,

PITTSBURG, PA.

Registers and Ventilators

We are not in the Combination.

Send for Prices.

Seavey Mfg. Co., : : BOSTON, MASS.

BRIDGEPORT STOVE WORKS,

BRIDGEPORT, ALA.

MANUFACTURERS OF

COOKING and HEATING STOVES

and STOVE HOLLOW WARE.

CATALOGUE SENT FREE ON APPLICATION.

COAL VASES.

Plain and Ornamental Decorations.

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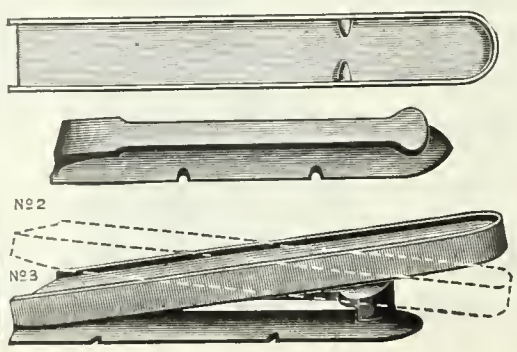
The Cincinnati Stamping Co.,

Cincinnati, O.

Improved ATLAS Radiator PEDESTAL



9½, 11 and 12 inches.

AVOID CUTTING THE CARPET.
YOU CAN LEVEL ANY RADIATOR.
NEAT IN APPEARANCE.

— 20,000 SOLD. —

Send for Circular and Prices.

ATLAS RADIATOR PEDESTAL CO.,

385 Bank St., New London, Conn., U. S. A.

AN OBEDIENT CHILD MINDS NO BETTER THAN A

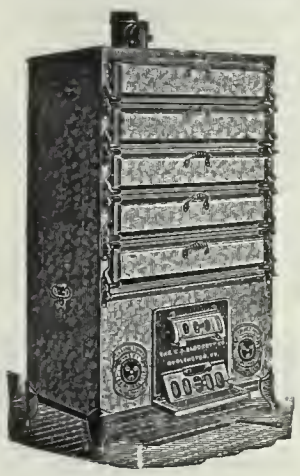
RICHMOND

HEATER.

IT ALMOST TAKES CARE OF ITSELF.
IT HEATS YOUR HOUSE FROM CELLAR TO GARRET WITH LITTLE FUEL.

Write for Catalogue.

Richmond Stove Co., Norwich, Conn.



CABINET
PORTABLE OVEN.

OUR LATEST PRODUCTION.

BAKES EVENLY BY THE CIRCULATION OF HOT AIR.

FOR BAKERS, CONFECTIONERS, HOTELS,

Also the best oven for Core Baking, Japanning, Enameling, etc.

Made in six sizes, single and double, for coal, wood, natural or artificial gas.

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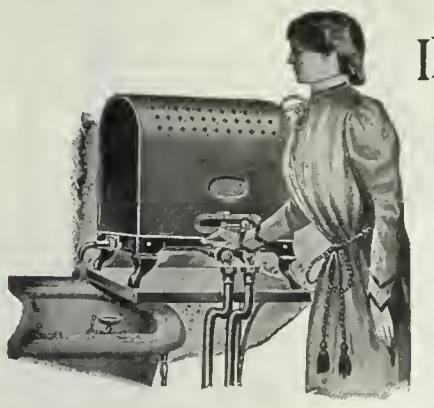
The G. S. BLODGETT CO., Burlington, Vt., U. S. A.

FOR SMART WORK

Use only "The Dean" Boilers

MADE BY

DEAN BOILER CO., 73b Pearl St. BOSTON, MASS.



THE VICTOR INSTANTANEOUS WATER HEATER

Is the cheapest, the most efficient and the neatest Water Heater made. It occupies but little space and is always ready, furnishing hot water in a few seconds day or night.

Send for Descriptive Circular, Prices, Discounts, Etc.

W. J. ADAM, - - Joliet, Ills.

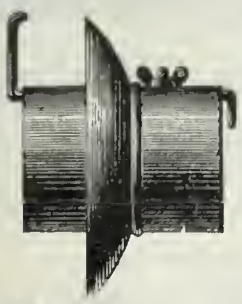
Stove Dealers

will make money and save money by using

Dixon's Graphite Cement.

There is nothing equal to it for repairing fire brick in stoves, furnaces etc. Let us send you sample and prices.

JOSEPH DIXON CRUCIBLE CO., - JERSEY CITY, N. J.



HAYLOR'S HOLD FAST STOVE PIPE

Is made 9⅛ inches long, each joint is ready, fitted with fastening device, and beautifully designed gilded collar, which measures 10⅛ inches in diameter for the six inch pipe, and 11⅛ inches in diameter for the seven inch pipe. Is sold with a guarantee that it will hold the stove pipe firm to the flue, and at the same time the pipe will not go in flue over 4 inches. Is absolutely tight and will not come loose. They are packed a half dozen, complete, to each crate.

Order from Your Jobber.

STUBER & KUCK, - Peoria, Ill.

STOVE REPAIRS.

Stove dealers' SUPPLIES of all kinds.

Water Fronts a Specialty.

WE GUARANTEE PROMPTNESS IN FILLING ORDERS

Catalogues, Order-Books, Postals or Envelopes sent upon application.

Largest Jobbers in New England.

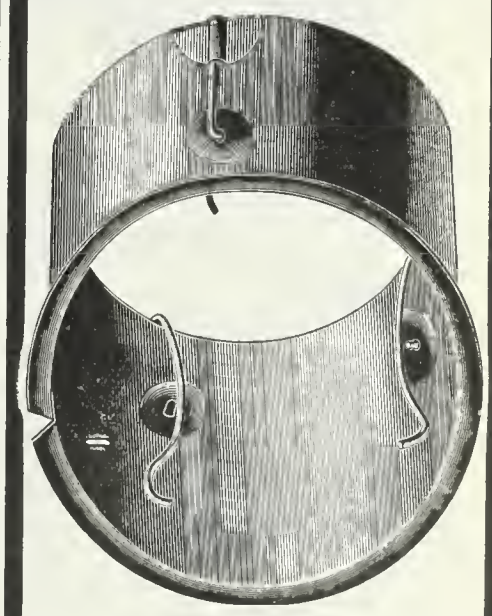
HENRY N. CLARK CO.,

56 and 58 Union St.,

BOSTON, MASS.

The S. & S. Patent

Stove Pipe Thimble



Locks the Pipe from Pulling Out, and from Pushing In and Closing the Draught. Will last a lifetime. Nothing to wear out, and costs but a trifle. *Send for sample* and prices.

CITY FORGE & IRON WORKS,

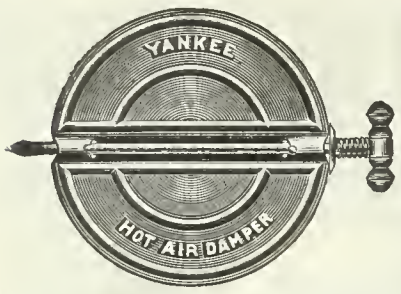
DAYTON, OHIO.

Hand Elevators and Dumbwaiters

made to be sold by the Hardware trade. Can be placed in position by any carpenter, Catalogue free.

ENERGY ELEVATOR CO.,

410 Cherry St., Phila., Pa.

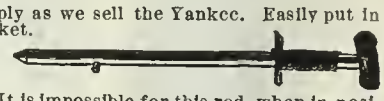


The YANKEE Hot Air DAMPER (Improved All Steel.)

THE YANKEE EXCELS.

Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod is made of ¼ inch cold rolled steel and slips into damper very smoothly. **Sample sent to any Dealer without charge.**



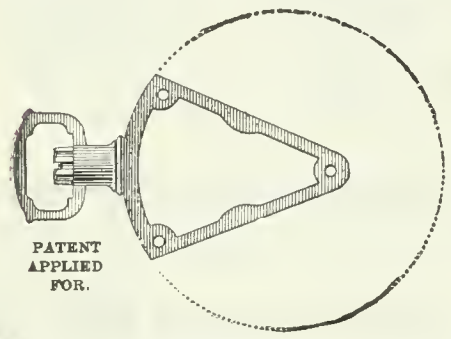
It is impossible for this rod, when in position, to move either way.

The S. M. HOWES CO., Manufacturers, 40-46 UNION ST., Boston, Mass.

Sizes 6, 7, 8, 8½, 9, 10, 10½, 11, 12, 12½, 14 and 15. NEW YORK: A. L. Canfield, 284-286 Pearl St. CHICAGO: Excelsior Steel Furnace Co.

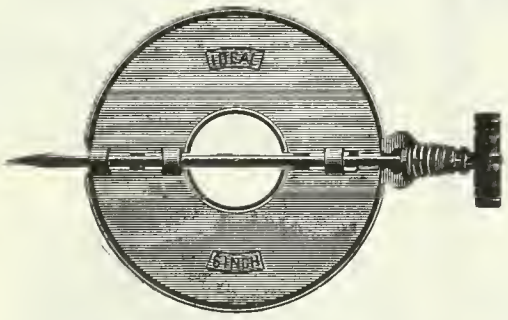
THE MALLEABLE IRON

DAMPER CLIP.



EASILY ADJUSTED
AND INDESTRUCTIBLE
WRITE FOR PRICES.
THE BROHARD CO., - Phila., Pa.

IDEAL DAMPERS, COVER LIFTERS



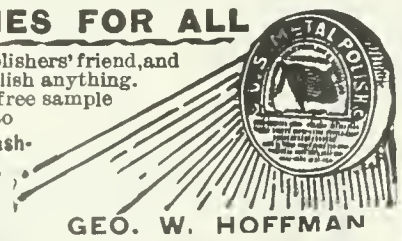
AND POKERS

HAVE NON-HEATING HANDLES OF ELEGANT DESIGN AND FINISH. THEY ARE THE BEST.

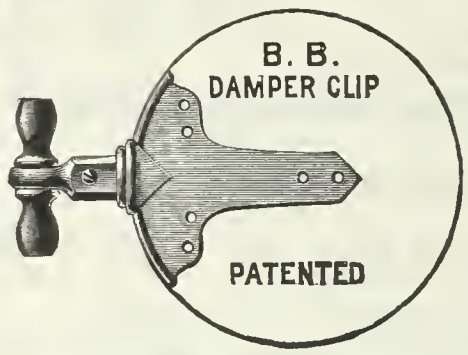
STOVER MFG. CO.
164 RIVER ST.,
FREEPORT, ILLS.

SHINES FOR ALL

It is the polishers' friend, and will polish anything. Write for free sample to 297 E. Washington St., Ind'p'l's, Ind.



GEO. W. HOFFMAN



The B. B. Patent

DAMPER CLIP

To remove Handle, simply loosen Nut *half way*—unnecessary to remove Bolt.

BEST AND CHEAPEST.

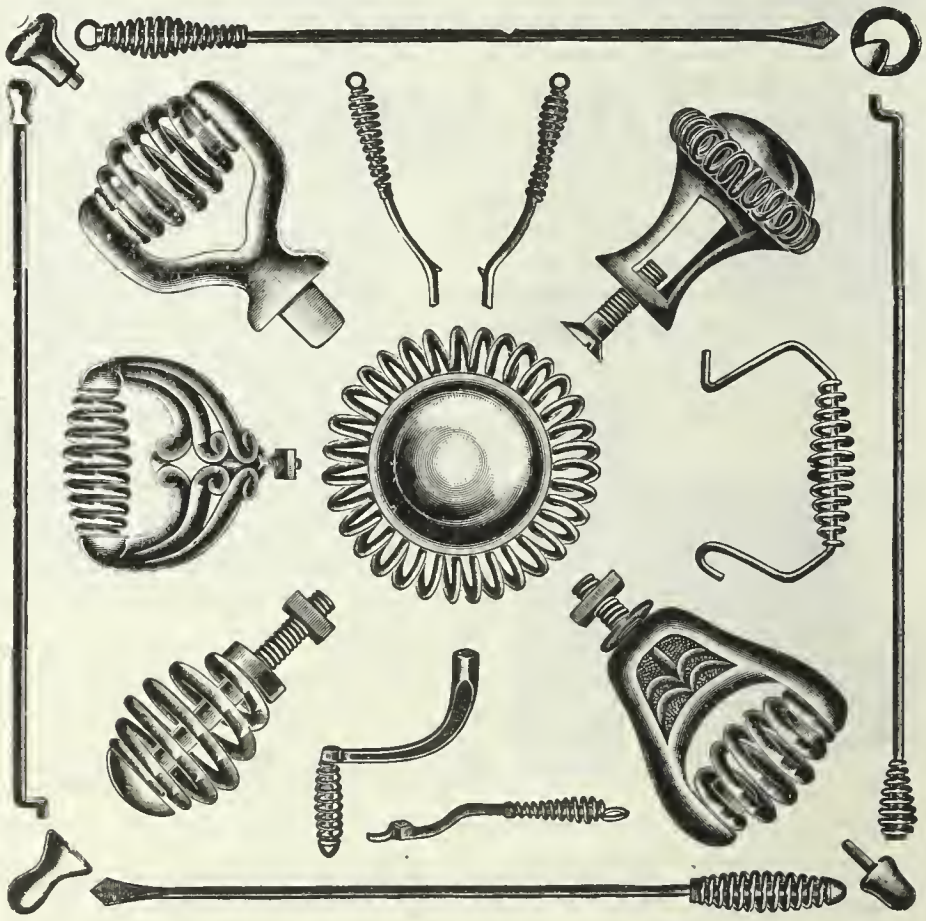
Send for Sample and be convinced.

All kinds of Dampers—Plain, Uncle Sam, American and others always in stock.

Send for catalog.

BERGER BROS. CO.,
Tinners' Hardware and Roofers' Supplies, PHILADELPHIA.

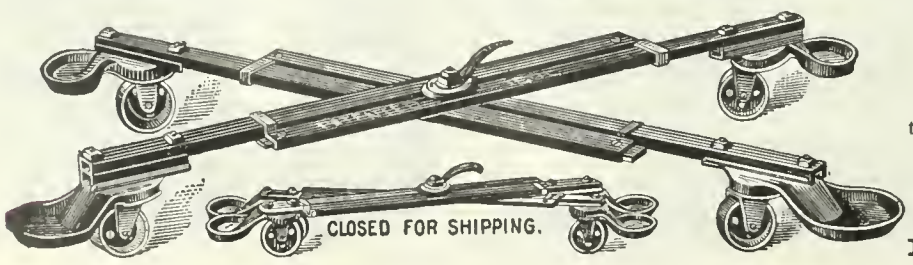
ARCTIC STOVE TRIMMINGS.



FANNER MFG. CO., - CLEVELAND, O.

MICA
EUGENE MUNSELL & CO.
MINERS & IMPORTERS.
NEW YORK. 218 WATER ST. CHICAGO 117 & 119 LAKES

The Model Stove Truck is out of sight when under a stove.



Is all steel, has only one adjustment, is practically indestructible.

We offer to take back and refund money if, after a month's trial, the Model is not satisfactory.

SEND FOR CIRCULAR AND PRICE.

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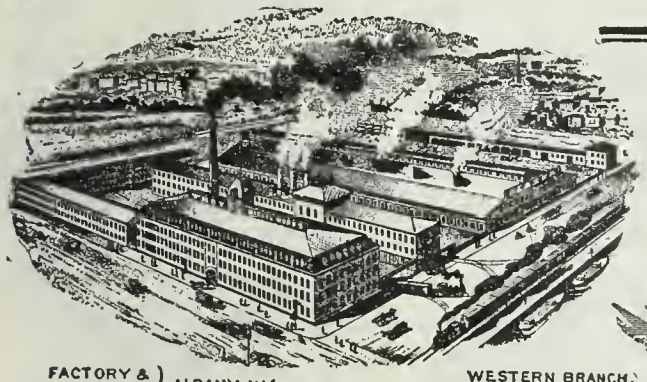
BOSTON, - - - MASS.

CABLE ADDRESS. (NICKEL.)

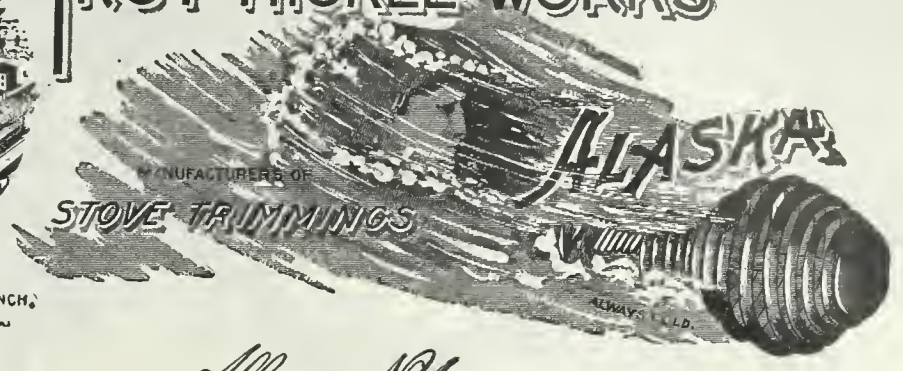
LOCAL & LONG DISTANCE TELEPHONE No. 162.



FACTORY & MAIN OFFICE } ALBANY, N.Y.

WESTERN BRANCH, CHICAGO, ILL.

TROY NICKEL WORKS



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POKERS, LID LIFTERS,
KNOBS, HANDLES, and a full line of HARDWARE.

MARCY STOVE REPAIR CO.,

MANUFACTURERS OF

RANGE, STOVE AND HEATER REPAIRS

AND FIRE-BRICK LININGS,

74 Beekman Street, New York.

FOUNDRY,
Perth Amboy, N. J.

FIRE-BRICK FACTORY,
36 to 46 South Fourth Street, Brooklyn, L. I.

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CATALOGUES NOW READY.

STOVE REPAIRS
WATER FRONTS

AND EVERYTHING FOR THE TIN SHOP

We can serve you better than anyone else. WHY? Because we have the stock on hand.
Repairs for 20,000 different stoves and furnaces.

WRITE FOR CATALOGUE. **H. E. HESSLER CO., Syracuse, N. Y.**

M. D. VALENTINE & BRO CO.

FIRE BRICK

CUPOLA LININGS A SPECIALTY.

WOODBRIDGE. N. J.

OUR facilities enable us to carry constantly on hand the largest stock in this country. This assures immediate shipment on receipt of order.

THE
PRESBREY STOVE LINING

Will not clinker and will last longer than any other.

SEND FOR NEW CATALOGUE.

PRESBREY STOVE LINING CO., Taunton, Mass.

AMERICAN SEAL

Elastic Oil Roofing Cement, Stove Putty,
Asbestos, Furnace Cement and Roofing Paint.

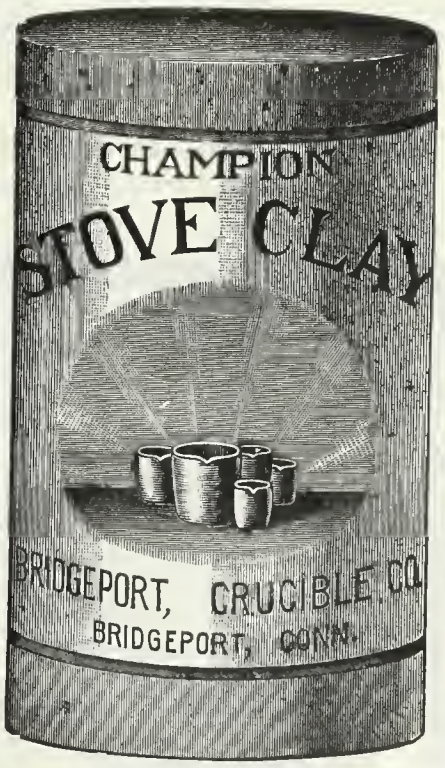
WRITE FOR PRICES.

J. L. PERKINS & CO., Western Agents, 241 Lake St., Chicago.

HANDLE THE BEST.

CHAMPION STOVE CLAY

Is the only brand made of crucible materials, viz.: Imported German Fire Clay and Plumbago from Ceylon.



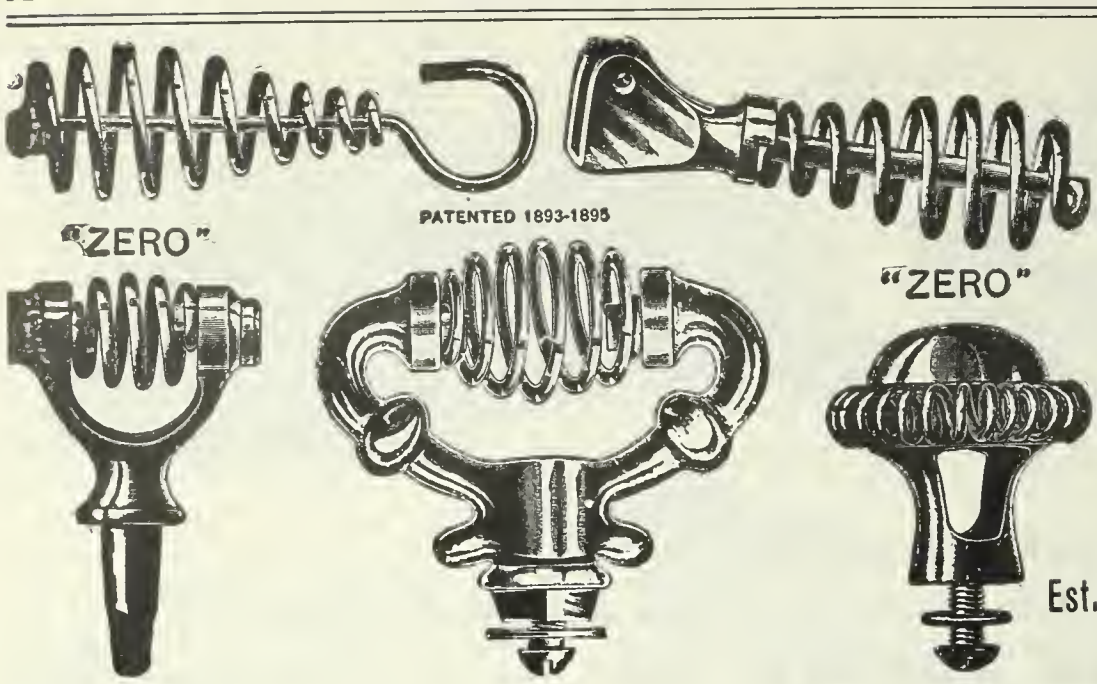
Dealers are invited to send for circulars.

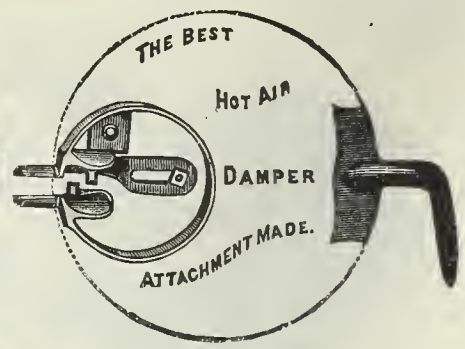
Packed in neat, attractive, round pasteboard boxes of three sizes: large, medium and small, holding about 10 lbs, 6 lbs. and 2½ lbs., respectively.

ALSO SOLD IN BULK.

Your jobber can furnish the goods.

BRIDGEPORT CRUCIBLE CO.
Bridgeport, Conn.





"ZERO"
WIRE GOODS.
MANUFACTURED BY
Est. of **W. F. GREENE,**
TROY, N. Y.

GAS FUEL

right in size, right in color, right in density, is what we are manufacturing and the price also is right.

If you are interested in gas fuel, we would like to send you samples and submit prices.

G. M. SOVERHILL, Sales Agent.
16 Tuxedo Place, Buffalo, N. Y.

RUTLAND FIRE CLAY CO.,
RUTLAND, VT.

SEND TO US FOR A

FREE SAMPLE

(Express Charges Paid).

Our **IMPROVED BLACK EAGLE** is the best polish ever made.
We except none.
A free sample will tell you all about it.
Buy from your jobber.

Nickel Plate Stove Polish Co., Manufacturers, **Chicago.**

"O.H." ONE PIECE STOVE PIPE Elbows

Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM In throat or under side of Elbow.

HANDSOMEST, HEAVIEST AND STRONGEST STOVE PIPE ELBOW MANUFACTURED.

—SOLE MANUFACTURERS,—

THE LAWRENCE-LETTS ELBOW CO., Ltd., - - Waverly, N. Y.

NICKEL PLATING OUTFITS.

ZUCKER & LEVETT & LOEB CO.
526 TO 530 WEST 25TH ST
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SEND FOR CATALOGUE OF
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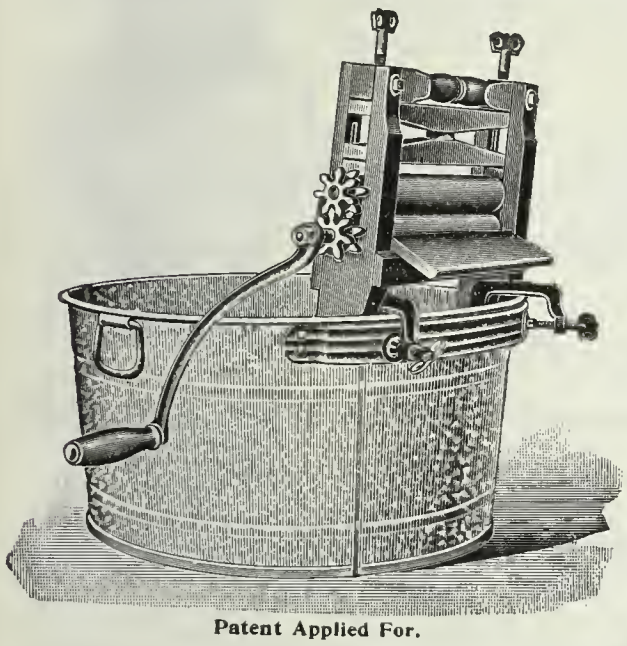
"PERFECT" GALVANIZED METAL TUBS.



Patent Applied For.

This is the only sheet metal Tub made upon which a wringer can be used satisfactorily. Your customers do not want a tub that they can't put a wringer on. Satisfy them by selling the "PERFECT."

THEY ARE CLEAN, BRIGHT, WELL MADE, WELL GALVANIZED.

Made in Four Sizes.

Sole Manufacturers,

SIDNEY SHEPARD & CO.,

Buffalo, New York City, Chicago, Kansas City, St. Louis, Denver, Seattle, San Francisco.

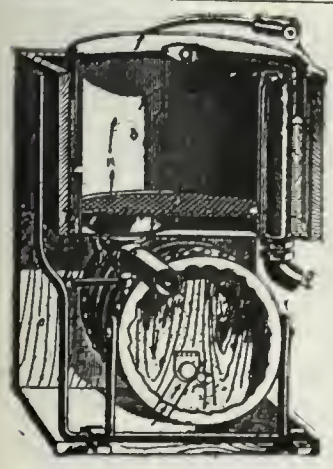
PIONEERS LEADERS

NICKEL PLATING OUTFITS

LOW SPEED DYNAMOS, NICKEL ANODES, LACQUERS.

BUFFS, CYANIDE POTASH, TURKISH EMERY, POLISHING MACHINERY.

THE HANSON & VAN WINKLE CO.
NEWARK CHICAGO NEW YORK



Thomson Smoke Machine

For Testing Plumbing.

WRITE US FOR BOOKLET AND PRICE.

GUNSTER & FORSYTH,
325-327 Penn Ave., Scranton, Pa.

If the Stove Foundries are NOT consolidated, are you fixed to fight the present fierce competition?

Are two concerns in New England, three in Pennsylvania, and three in New York state (one a new beginner) going to monopolize the best trade simply because they are using our patterns for "Cheap to make—Cheap to sell" stoves and heaters?

Troy and Albany might still be making seven-tenths (7-10) of all stoves manufactured in U. S., as they did twenty years ago, had the Foundries listened to our interested (of course), but at the same time sound and wise counsels.

BE WISE!

THE GOBEILLE PATTERN CO.,
Cleveland, Ohio.

THE GEORGE W. COPE Stove Pattern Works.

ORIGINAL, ARTISTIC AND PRACTICAL CONSTRUCTION.

Cor. Randolph and Atwater Sts.,
DETROIT, : : MICH.

PATTERNS

FOR STOVES AND HEATERS.

First-class in wood and iron.

Vedder Pattern Works. - Troy, N. Y.

THE MEILINK

HOSE COUPLING

FITS ANY SIZE HOSE, 2, 3 OR 4 PLY.

A glance at the illustrations will indicate its superior advantages over any other similar device now on the market. Anyone can attach it instantly. Provides a positively tight joint. Easily taken off or put on. Never loses the washer. Won't tear up the lawn

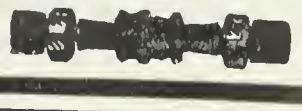
THE BEST THERE IS.

The better you satisfy your trade the better they will satisfy you.

Try a Sample Dozen.

THE
Meilink Mfg. Company,
TOLEDO, O.

Write for Prices and Discounts.



COLWELL LEAD CO.,

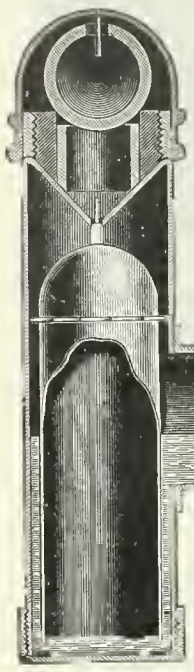
63 Centre Street, New York.

Manufacturers of

LEAD PIPE, SHEET LEAD, SHOT,

And Sellers of

Everything You Want for Plumbing.



Morgan's 20th Century Air and Vacuum Valve

Is a positive seal against air returning to the radiator. Check being perpetually balanced in water requires no pressure to lift it. A banked fire, with drafts closed, will maintain heat night and day in mild weather. Will save four times its cost in a single season.

MORGAN & CO.,
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VANDERMAN'S

Adjustable Fitting

FOR

Soil Pipe Connections.

MODEL FITTING
Sent on Application

SEND FOR PRICE.

☞ Freight allowed on assorted lots of twelve East of Mississippi River.

Send for "A" Catalogue Showing large line of

Plumbers' Specialties.

THE VANDERMAN PLUMBING & HEATING CO.,
WILLIMANTIC, CONN., U.S. A.

GALVANIZED STEEL and WOOD TANKS.

All sizes and shapes.

J. H. EDWARDS,
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Leather and Rubber

WASHERS,

Machine cut, at less price than can be cut by hand. Send Sample for prices.

I. G. MARSTON & CO,
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TRIMO PIPE CUTTER

Decided improvement. Less friction. Can be changed from a roller to a three-wheel cutter. Extra wheels in the handle. Send for catalog.

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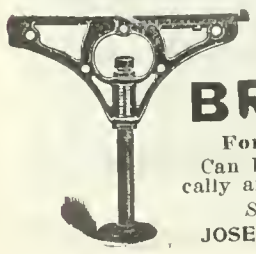


BOSTON
ADJUSTABLE
BRACKET

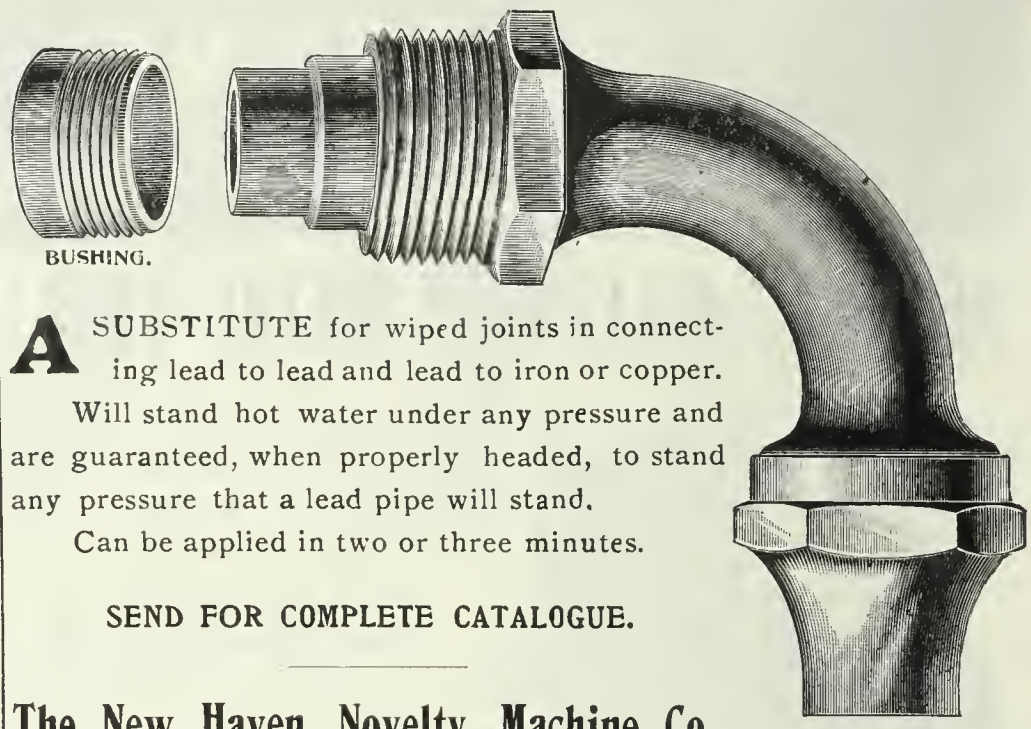
For Sinks and Trays.

Can be adjusted both vertically and laterally.

Send for Circular.

JOSEPH H. YOUNG, Boston.

NOVELTY BOILER COUPLING.



A SUBSTITUTE for wiped joints in connecting lead to lead and lead to iron or copper.

Will stand hot water under any pressure and are guaranteed, when properly headed, to stand any pressure that a lead pipe will stand.

Can be applied in two or three minutes.

SEND FOR COMPLETE CATALOGUE.

The New Haven Novelty Machine Co.,

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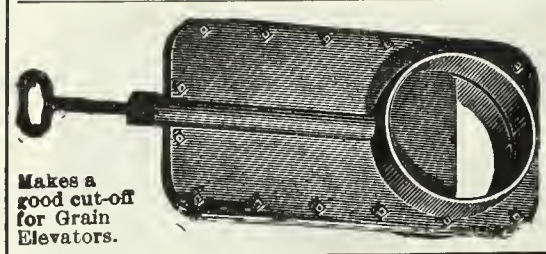
THE No. 5 FIRE POT.

$4.50 Net.

Is light, strong, and capable of bearing hard usage. The flame is blue, free from smoke and intensely hot, heating the heaviest irons in half the time required by other makes A kettle of solder can be kept hot enough to wipe joints. **and at the same time, without removing kettle, there is sufficient room and heat to keep soldering irons ready for use.** There is no other make of fire pot that can do this Bear this in mind when you need one. The top section may be removed, **thus exposing an open fire, which may be used as a torch or brazing fire;** can also be used in taking soil pipe apart, thawing frozen pipes, or wiping overhead joints. We warrant it to please; your money back if it doesn't

CLAYTON & LAMBERT MFG. CO.,
DETROIT, MICH.



Makes a good cut-off for Grain Elevators.

IMPROVED WIND-GATE

SEND FOR PRICE-LIST AND DISCOUNT TO

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FOR PLUMBERS.

Office Editions: { 100 Complete Estimates, $1.50. / 250 Complete Estimates, $2 50.

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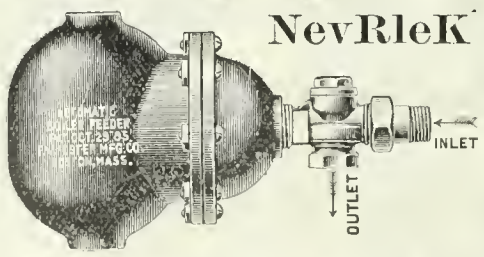

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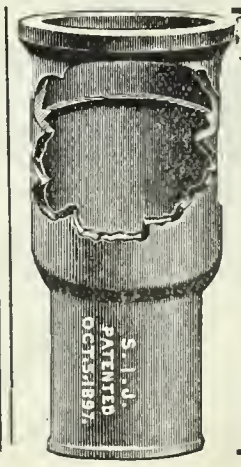
Our Booklet tells all about it.

F. W. FOSTER MFG. CO.,
12 Portland St., Boston.



SISSON
INSERTABLE
JOINT
FOR SOIL PIPE.

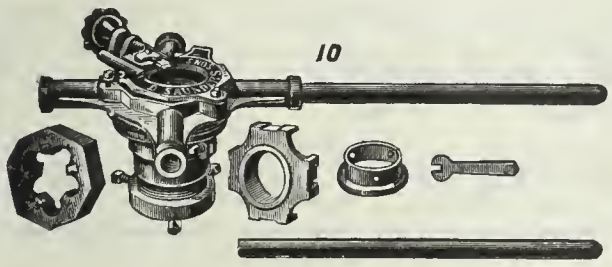
Sizes, 2 to 6 inches.
Light and Heavy.
Saves labor, expense, and makes a neat job.

SEND FOR CIRCULAR.

R. Estabrook's Sons,
1st St., Boston, Mass.

D. SAUNDERS' SONS.

Manufacturers of



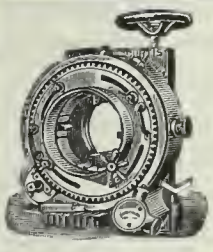
DIE-STOCKS AND VISES

FOR **LARGE PIPE.** These stocks have ***CUTTING OFF ATTACHMENT,*** and both Vises and Stocks are Malleable Iron. Light, strong and of superior design and finish; also ***PIPE THREADING MACHINES*** ¼" to 18", Tapping Machines, &c.

Send for Catalogue to

27 Atherton St. **YONKERS, N. Y.**

FORBES PATENT DIE STOCK

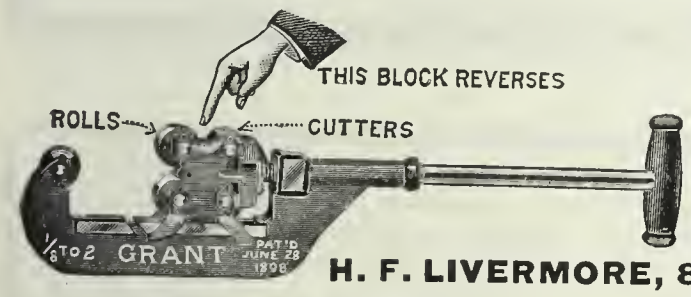


And one man can, with ease,
Cut off and thread a 12-inch pipe.
Smaller sizes proportionately easy.

Send for Catalogue.

THE CURTIS & CURTIS CO.,
56 Garden Street, **BRIDGEPORT, CONN.**

THE GRANT CHANGE PIPE CUTTER.



ONE IS ENOUGH TO CARRY.
CUTS FROM ⅛ TO 2 IN.

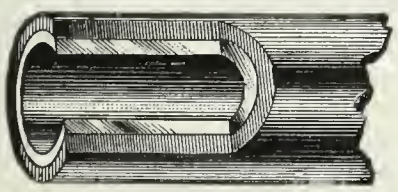
Cuts with 3 cutter wheels, or with 1 cutter wheel and 2 rolls.

Changes Instantly.
Strong, light and simple.
Nothing to get out of order.

H. F. LIVERMORE, 81 Pearl St., Boston.

TIN LINED IRON PIPE.
FOR PURE WATER.

Avoid, without extra expense, all danger of lead or brass poisoning.



This lining cannot be torn from the pipe.

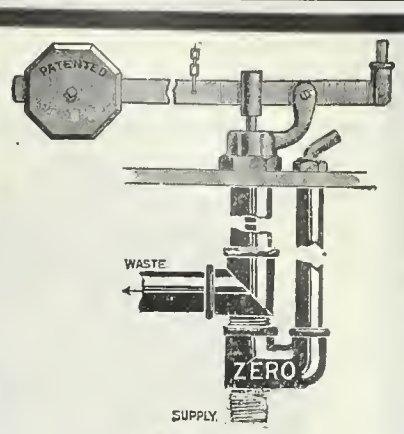
INVESTIGATE.
SEND FOR CATALOGUE AND PRICES.
LEAD LINED IRON PIPE made the same way.

LAMB & RITCHIE, Cambridge, Mass., U. S. A.

GEM GASOLINE SOLDERING FURNACES

are ready for use, possessing no offensive odor, no smoke, no noise, simple, powerful, durable, convenient and safe. They stand unrivalled, unexcelled and unequalled in their perfection. Try them.

Burgess Soldering Furnace Co.,
COLUMBUS, O.



SAVE HALF

The expense of installing closets by getting

Zero Anti-Freezing Valves.

They can be put in with half the time and half the labor because they do not require a pit or vault

They are simple and durable in construction—made without screws, springs or pins

Zero Valve & Brass Mfg. Co.,
296 Seneca St., Buffalo, N. Y.

NOTHING SUCCEEDS LIKE SUCCESS,

hence the unqualified success others have experienced with the

CLIMAX CELLAR DRAINER

should induce you to use it also Your customers need This Drainer, and you should write to-day for circular and prices, because it is the Plumber best qualified to do intelligently and satisfactorily all classes of work who meets with the geatest success and therefore the success of the

Year of effort have enabled us to produce a Drainer of marvelous perfection, entirely free from stuffing boxes, springs, packings and washers; a result not accomplished by any other manufacturer.

The simplicity, reliability and superiority f the **Climax Cellar Drainer** are proverbial.

Climax Cellar Drainer is your success also.

Sold by all Jobbers.

MANUFACTURED BY
C. M. KEMP MFG. CO.
BALTIMORE.

ALWAYS IN STOCK.

ALL SIZES OF

Galvanized range boilers, expansion tanks and boilers with copper tube coils inside for heating water by steam.

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WATER SUPPLY BIG VOLUME **LIFTS**
L. E. RHODES CO.
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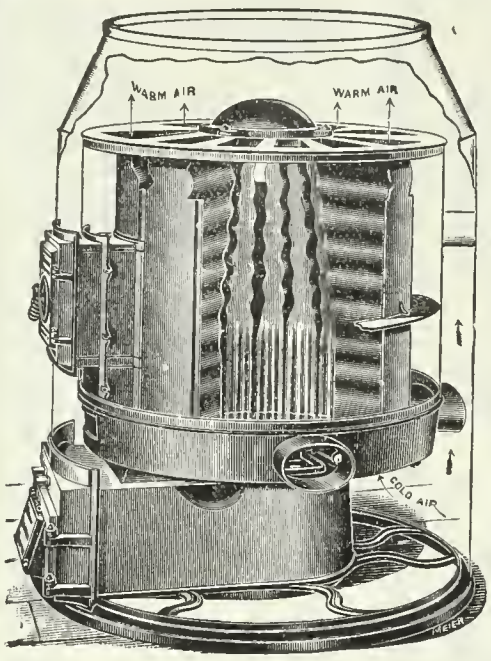

KELSEY FURNACE CO., Makers, Syracuse, N. Y.
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The Kelsey Warm Air Generator

SEE OUR EXHIBIT AT THE PAN-AMERICAN EXPOSITION.

World's Columbian Exposition, Chicago, 1893, Award, With Medals.

For a new and original, and very efficient form of Warm Air Heater, in which heavy cast iron sections, with corrugated sides, through which is circulated the fresh air, form the fire box and combustion chamber, and are exposed on all sides and throughout their length to the fire and hot gases, thus exposing an exceptionally large surface to the fire.

For the means whereby the warm air may be directed in separate and independent channels, and distributed in such proportions as to insure uniformity of heating in different parts of a building.

Brilliant Enameled Steel Ware

This ware is now manufactured by our factory at Bellaire in the Brown Color only, same having been discontinued in all colors by our Portland, Conn. factory. Particular effort is being made to turn out a highly satisfactory and pleasing article, and all dealers are requested to order a sample lot to be convinced of the merit of this ware.

White and White Enameled Steel Ware

This ware will also be made by our Bellaire Factory only hereafter having been discontinued by the Portland Factory. A large line of hospital goods made in this ware Recommended where sanitary qualities are essential.

National Enameling & Stamping Co.

BRANCH OFFICES New York Baltimore Chicago St. Louis Milwaukee ADDRESS OFFICE NEAREST YOUR LOCATION

THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, August 10, 1901.

DAVID WILLIAMS COMPANY, - - PUBLISHERS.

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Volume LVI.....No. 6
Index to Reading Matter.....Page 59

Shorter Credits in the Stove Business.

Manufacturers who are using sheet steel and other products of the great consolidations have been initiated, quietly but firmly, in the ethics of prompt payment for their purchases. While it seemed a rather drastic proceeding, an excellent object lesson on business practices has thus been furnished. All who sell goods would welcome similar promptness, but are not always in a position to enforce it. The stove manufacturers have been working for a long time to shorten credits and obtain quick returns, although there has been some diversity of opinion among them on the subject. While none of them would object to short time and prompt payments, it has been a question as to what would be satisfactory to their customers. The consolidations, however, have emphasized the fact that ten days means ten days and no more, and that payment must be made at their expiration. Previous to the inauguration of the present condition of things the stove manufacturers received their invoices with terms marked in the usual manner, and after the goods had come to hand and invoices had been checked, settlement was made in the regular course of business, and sometimes in a leisurely way. As soon as the new managers took control of the steel industries they demanded a settlement to the minute and would brook no excuses. That the house had been a good customer and was absolutely solvent, and, moreover, indignant and surprised at such peremptory demands, counted for nothing. The bills must be paid on time. This decisive manner of doing business caused some ill feeling and called out acrimonious correspondence. Such complaints were met in a very courteous and explanatory manner, but nothing was conceded in abatement of the terms of payment. The recitation of these facts is not for the purpose of criticism, for there is, indeed, much that is desirable in the new state of affairs, but to bring up the question of shorter credits in the stove trade. The steel makers have done what every business man would do if he could. There is no question as to the desirability of prompt payments. In this case the stove manufacturers have conformed to the terms imposed upon them, and their customers should do the same. There is no doubt that laxity in the matter of payment is a detriment to the trade. Much is to be said in favor of shorter terms and the advantages that would result therefrom to both the producers and distributers of goods. The stove dealer is not as exact in his business methods or as prompt in his collections as the welfare of his business requires. A reform in these regards would tend to promote his success. The stove manufacturers will be advancing the welfare of the trade in pushing patiently and earnestly in the direction of shorter terms. The recommendation of the National Association that goods be sold on sixty days instead of the former terms of four months was an important step in the right direction. It would be a matter for congratulation if the rule were lived up to by manufacturers and merchants. There should be cooperation between the manufacturers and the dealers in securing this end. Merchants, large and small, should welcome any efforts to bring about a better condition in this regard, recognizing the fact that in this way the tone of the trade will be improved and a basis laid for a larger and more profitable business.

Furnace Heating with Natural Gas.

Wherever natural gas has been adopted as fuel the satisfaction with the results obtained has been only secondary to that derived from the avoidance of labor and dirt which accompanies its use. In no field are these benefits more apparent than in house heating, and particularly where the gas is used in hot air furnaces. Not only is the care of the fire reduced to a minimum, but the steady temperature maintained by a gas fire in a furnace secures a constant inflow of pure warm air, maintaining a comfortable atmosphere in the house. That special features would be attached to the installation of a heating system of this character is natural, which lends interest to the presentation in another part of this issue of a description of a furnace system using natural gas for fuel. It will be noted in this case that a large volume of warm air is provided and also that the natural gas lends itself admirably to the ventilation of the building, being applied so that its heat is directly used for effecting exhaust currents to remove the fouled air from the various rooms. Since its discovery natural gas as a fuel has been used in all kinds of heating apparatus, and has given general satisfaction. It is gratifying to note that the experience in this line has led to substantial improvement in furnaces burning natural gas as fuel, and to the modification of the best practice in furnace work to suit the special requirements of the case.

Packing Goods for Export.

The importance of the careful packing of goods for export has been referred to in these columns on several occasions, and a number of our consular officers at various times have brought the matter to the attention of American exporters in their reports to the State Department. The latest communication received in this connection is that of Charles Neuer, United States Consular Agent at Gera, Germany, who complains that American manufactured goods do not receive the favor that their merits deserve by reason of the unsystematic and careless methods used in packing them for shipment abroad. In most European countries special attention is given to packing, as no matter how excellent the goods they are bound to lose in value if badly put

up. European manufacturers lay great stress upon the durability and neatness of their packages, and old boxes or other coverings are never used. In making shipments to Europe American exporters should wrap their goods so as to exclude moisture, and pack them in strong wooden cases nailed with wire nails and strapped with steel bands. Economy of space is also an important consideration. Special care should be taken to wrap articles of cast iron so as to avoid shifting. On account of careless packing goods of this class frequently arrive at their foreign destination either broken or rusty. Care is also necessary in driving nails, it often having been found that nails have penetrated and damaged the contents of the cases. Mr. Neuer says he has found that, considering the distance goods are transported and the amount of handling they are calculated to receive, the American packing is often sadly inadequate. As an illustration of this, he cites the case of a large number of American stoves which were ordered by a German merchant. Upon their arrival several of them were found to be badly broken, and many of the smaller fittings, such as screws, knobs, &c., were missing. The stoves were packed in crates weighing over 400 pounds, which made careful handling impossible. The fittings, including heavy lids, were put inside the ovens loose, and shifted noisily about whenever the crates were moved. As a consequence all further orders to this particular house were canceled. It is unfortunate that American manufacturers and exporters still give cause for complaint in regard to their careless methods of packing. There is no doubt that due attention to this feature would tend to materially increase our export trade. It is conceded everywhere that American manufactured goods are as good as, if not better than, those of other countries, and it is only necessary to correct these minor faults to render their position in the markets of the world unassailable.

The figures published by the Post Office Department covering issues of stamped paper during the fiscal year ended June 30, 1901, furnish very convincing testimony of the increased activity of business during the past 12 months, as compared with former years. The total number of pieces of stamped paper issued during the last fiscal year, including postage stamps, stamped envelopes, newspaper wrappers and postal cards, was 5,705,731,709, representing a money value of $104,785,986, an increase over the previous fiscal year of $7,098,215 and over the fiscal year 1899 of more than $12,000,000. Taking these figures as a basis, there seems every warrant for the statement that the past 12 months formed the most prosperous business year in the history of the country.

Nothing can give a more adequate idea of the immense advance in wealth and population that New York City has made since the early part of the last century than the remarkable difference in the values of real estate in the lower part of Manhattan Island 80 or 90 years ago and now. *Leslie's Weekly* quotes some figures in this connection which are of interest. For example, the Boreel property on lower Broadway, which was recently sold for $2,500,000, changed hands in 1815 at a valuation of $10,000, and other buildings in the same neighborhood, then assessed at a valuation of $16,000, $6000 and $8000, are now rated at $1,700,000, $850,000 and $350,000, respectively, showing increases in some cases of more than a hundredfold in valuc.

The Contractors' and Manufacturers' Protective League has been organized in St. Louis, Mo., with the object of doing away with sympathetic strikes in the city. There has been more or less friction between contractors and the Building Trades Council of St. Louis, and the feeling has been growing that the time has arrived to take some action to prevent strikes, especially during the World's Fair period and subsequently. The league embraces in its membership the local master builders' association, iron and lumber interests, the Building Contractors' Association, master bricklayers, stone masons, and a majority of the building materials men. The league is composed of substantial men, said to be thoroughly in sympathy with unionism, but opposed to the practices employed by the Building Trades Council and its agents in St. Louis for the past two years.

Now that the drought in the corn States has been effectually broken by copious rains, it is found that the early estimates of failure and excessive damage to the crop were largely exaggerated. That severe damage was done to the corn by lack of rain and extreme heat last month must be admitted, and the late rain came only just in time to save the farmers from very heavy losses. But the situation, it appears, was never quite so desperate as the alarmists would have made it. Moreover, the falling off in the volume of the corn yield will be largely compensated for by the increased value of the cereal. The wheat crop is very large, and, taking everything into consideration, the farming interests are not likely to suffer to any serious extent this year. The outlook for the crops is now brighter than it has been for many weeks past.

It frequently has been assumed that the high level of last year's phenomenal commercial operations could not be repeated this year. Reports on the volume of trade for the six months ending June 30, 1901, do not bear out this prediction. Figures gathered by the Treasury Bureau of Statistics on the movements of internal commerce for the first half of 1901 show that as a rule the contrary is true and that the tide of commercial prosperity is still on the upward trend. Wheat receipts, for example, at eight leading markets aggregated 217,159,743 bushels for the season to June 30, 1901, compared with 209,972,915 bushels for the season to June 30, 1900. The yearly receipts of live stock at five Western markets to June 30, 1901, were 2,969,566 cattle, 9,120,790 hogs and 3,269,537 sheep. This exceeds by 344,552 head the arrivals for the corresponding period of last year. Traffic receipts of live stock at Chicago alone were 4208 cars above those of the first six months of 1900, and shipments were greater by 3786 cars. Lake receipts have exceeded those of last season in the quantity of flour, coal, lumber, logs and unclassed freight handled. The shipments of grain for the six months since January 1 reached a total of 50,559,011 bushels, being a million and a half bushels ahead of last year's record for the corresponding six months. This illustrates the extent to which transportation interests have been sharing in the prosperity of the country this year.

The British House of Lords this week rendered an important judgment affecting trades unions. The case was brought up on appeal from the judgment of the Irish courts awarding a wholesale butcher damage against the Butchers' Assistants' Association, which brought pressure to bear on retailers to boycott the plaintiff until he dismissed a certain nonunion employee, threatening, otherwise, to call out the union employees of the firms concerned, and, finally, it induced the nonunionist to leave the plaintiff. The Lords dismissed the appeal, on the ground that the acts of wrongful and malicious conspiracy were not undertaken to advance the interests of the workmen themselves, but solely to injure the plaintiff.

The Hamburg-American Line is reported to have signed a contract with Harland & Wolff of Belfast, Ireland, for the construction of a 21,000-ton steamer. Although larger than the "Deutschland," the new liner will not be built for speed, and, therefore, is not calculated to compete in that respect with the transatlantic champion.

THE WESTERN STOVE TRADE.

It is interesting to note that the great drought in the West has had, thus far, no marked effect on the demand for stoves and ranges. Manufacturers whose trade covers the entire West, including specially afflicted districts, and who had booked numerous advance orders during the spring months, report that cancellations are much fewer than they had expected. They are now passing through a critical period, because of the apprehension over the drought, and it is extremely encouraging to find that the trade is not encountering seriously adverse conditions.

It is expected that the fall trade this year will be much larger than that of last year. It will be remembered that July, August and September of last year were exceedingly dull months. This was due to several causes. In the first place the trade had placed heavy orders in the early spring, anticipating an advance in prices. Next, general business was badly checked by the great break in wire nails, which occurred in the latter part of April and completely upset all confidence in values of hardware and necessarily affected the stove trade. Buyers from that time looked forward to a slump in stove prices. They waited through the summer months and at last were compelled to make purchases in October and November. The November business proved to be the heaviest for that month ever known.

This year no overbuying occurred during the early months. Trade has proceeded on a normal basis without any particular disturbance, or special development, but has been governed entirely by the supply and demand. This has brought the trade into the regular buying months in fair condition. July proved to be a month of exceedingly good business, and thus far in August the sales are running very much in excess of the corresponding period of last year. Now that the drought has been broken and the first estimates of the damage to crops have been found excessive, manufacturers are strongly inclined to believe that the buying of stoves will be of the average seasonable character, if not somewhat better. Consequently they are looking forward to a good stove year.

Prices are being well maintained, and in view of the scarcity of steel no temptation exists to cut them. The leading manufacturers of steel ranges and other steel goods are believed to be fairly supplied with stock thus far, it being only the smaller manufacturers who have found themselves seriously inconvenienced by the strike in the steel sheet mills. If the strike continues for any length of time it is possible that the shortage may be felt by the entire trade. If this occurs it will be very difficult to secure such goods and prices may advance. Even cast goods are not free from the possibility of being affected on this account, as few constructions are now turned out into which sheet steel does not enter to a greater or less extent.

What Cheer Circulating Wood Heaters.

The What Cheer Stove Company, St. Anthony Park, St. Paul, Minn., have favored us with a copy of the sixth annual catalogue of their circulating wood heaters. The What Cheer heater is specially adapted to the use of wood and heats a room on the same principle as a hot air furnace—namely, by the circulation of the heated air through the room. The heater, in general appearance, resembles a Todd stove, but has an outer casing, perforated at the top and bottom, so placed as to leave an ample air space between it and the stove body. The cold air thus enters the lower perforations and, being heated by coming in contact with the stove body, passes out through the upper opening, thus causing a rapid circulation of warm air to all parts of the room. The stove body is constructed of heavy steel plates, which are good conductors of heat and at the same time very durable. The casing is constructed of Russia iron, which makes a very attractive finish. The draft opening in the feed door is so arranged that the air passes through a hollow space and is heated before it reaches the fire, thus making a hot blast draft, which secures more perfect combustion of the fuel and consequently greater heat.

The catalogue illustrates a variety of patterns, comprising highly ornamented stoves for parlor use, plainer stoves for ordinary domestic purposes and large heavy stoves for heating offices, school rooms, stores, &c. The catalogue also contains a number of testimonials from persons who have used these heaters and have found them very satisfactory in operation.

Riverside Stoves and Heaters.

The catalogue of 138 pages which has just been issued from the press by the Rock Island Stove Company of Rock Island, Ill., is an attractive publication, profusely illustrated and bound in colored paper covers. The work is intended to cover the season of 1901-1902, and in its early pages are to be found announcements regarding terms, shipments, samples, weights and measurements, a telegraphic code, and a view of the Riverside steel range, dismantled, showing the essential parts of which it is constructed. In referring to this range the company state that they have taken great care to make it heavy and substantial, attention being particularly called to the fire box and the top of the stove, which is claimed to be new on steel ranges. Another feature is the peculiarly "nibbed" oven bottom, reproduced in heavy steel and guaranteed not to warp. The range is made for burning soft coal, hard coal or wood, and is offered in a number of styles and sizes, several of which are illustrated. The Island City Steel Range is an attractive construction, of low cost, embodying features which render it satisfactory in operation. What the manufacturers refer to as "the best low priced steel range on the market" is the New Riverside, which has corrugated oven bottom, pouch feed with register, duplex grate which by reversing can be used for wood, steel body well braced, and linings of asbestos. Many other members of the Riverside family are presented, including the wood Riverside range, intended for burning wood, cobs, &c., as fuel. Following the ranges, attention is given to cook stoves, of which a variety are presented. The leading base burner is offered under the name Riverside, and is a very handsome construction. Other goods include the Maple Riverside, an attractive base heater for wood only; the New Riverside Oak, with and without ventiduct, and the Island City Hot Blast. The closing pages of the catalogue are devoted to the subject of repairs, tables being presented giving the weights of pieces usually called for as repairs to the stoves made by the company; a list of pieces fitting more than one stove, together with lists of interchangeable wood linings, water fronts and backs, reservoirs, &c., followed by directions for operating stoves, and a miscellaneous assortment of advertising cuts.

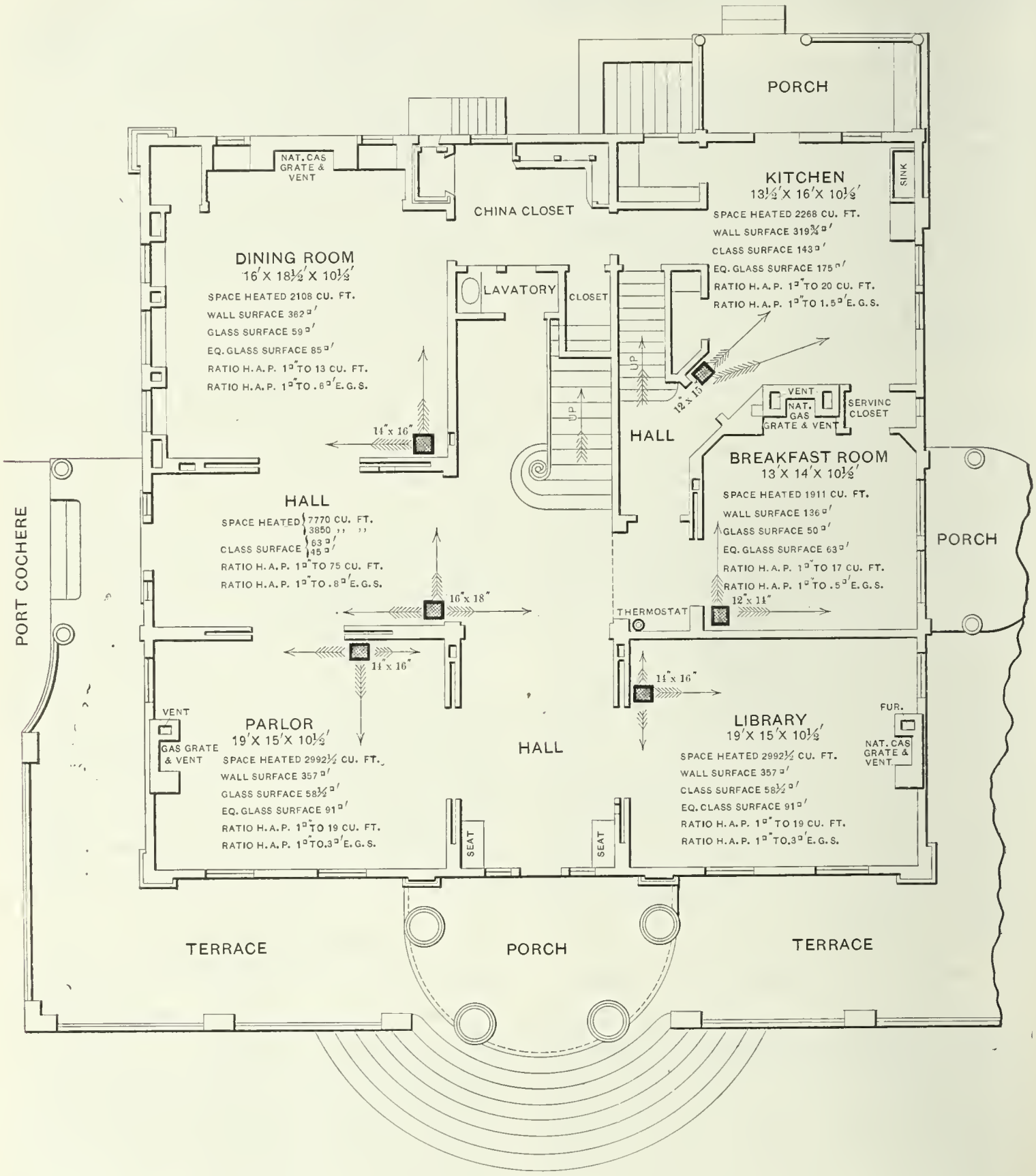
Etna Hot Air Furnace.

The Pittsburgh Stove & Range Company, Pittsburgh, Pa., are sending out a handsomely printed catalogue of 20 pages in a pink cover, bearing a design in yellow and black, devoted to their new Etna hot air furnace. In building this furnace the company state that they are contributing their quota toward the betterment of heating appliances and do not desire it classed with many cheaply constructed, low priced furnaces, but recommend the Etna as a high grade furnace. Among its special features are a deep, strong ash pit, an easily removed labor saving grate, a sectional fire pot, an air blast and a combustion chamber and radiator of either steel or cast iron, arranged to effect an indirect draft and to expose a large surface. Both the fire pot and the cast iron radiator have greatly increased heating surface by the use of extending wings.

MAST & CLASS, 643 Massachusetts avenue, Indianapolis, Ind., agents for the International Heater Company of Utica, N. Y., inform us that in order to enlarge their office and showroom they have leased a two-story building in the rear of their present premises. In it they will carry a complete line of Economy Furnaces and establish their tin and sheet metal working shop.

A Furnace System Using Natural Gas.

The fact that natural gas when burned in a hot air furnace does not subject it to the heating and cooling due to the replenishing of a coal fire with fresh fuel, but instead maintains a steady temperature at all times, will lend interest to the following description of such a heating system. The residence of William L. Glessner, president of the Laughlin Nail Company, Wheeling, W. Va., stands on a knoll commanding a fine view at Pleasant Valley, a suburb of that city. The building is of substantial construction and was erected from plans made by Edward B. Franzheim, an architect of Wheeling. The heating system was installed by the Stanton Heater Company of Martin's Ferry, Ohio, a No. 84 Stanton seamless warm air heater of the portable type, incased in galvanized steel, being used. The work for the heater may be understood from the plans of the first, second and third floors, shown in Figs. 1, 2 and 3, on which are given the space heated, wall, glass and equivalent glass surface, and the proportion existing between the area of hot air pipes and the work done. Fig. 4 is a plan of the basement, showing the location of the heater and the size of the hot air pipes leading



A Furnace System Using Natural Gas.—Fig. 1.—Plan of First Floor.

to the different rooms. The size of the hot air pipes, when considered in connection with the size of the rooms which they heat, will show that the system is intended to furnish warm rather than hot air, and it is said that the air is not delivered into the rooms at a temperature above 140 degrees. There are 14 hot air pipes, having a combined area of 1406 square inches.

THE COLD AIR SUPPLY AND FILTER.

An interesting feature of the plant is the method of supplying cold air. An opening on the west side of the

building is provided with a screen and damper, the screen to prevent the entrance of animals, leaves and other foreign matter, and the damper to shut off the outside air supply in case of heavy winds. From this screen a duct leads to a window which has an opening with an area of 1400 square inches. This window opens into a filter room, 6 x 10 feet in size and 8 feet in hight. Placed diagonally across this room is a cheese cloth filter screen, exposing 10 square feet of surface for every square foot of area in the duct supplying fresh air to the furnace. A door is placed in this filter room so that cold air can be taken from the basement when the wind from outside is too strong. This door also allows the filter screen to be removed and washed when the particles of dirt so fill the meshes of the cloth as to interfere with the proper flow of air. The cloth screen is fastened to a margin of stouter cloth, provided with eyelets for securing it to screw hooks. By this means it is only necessary to provide two filter cloths, and yet always have one fresh laundered and clean when it is necessary to remove the one that has become filled with dirt. The time that a filter screen will render service without cleaning depends principally on the weather. After a rain, when the atmosphere is clean, a filter may serve for several days, while on the other hand, in dry weather, when the atmosphere is filled with dust, the cloth will soon become so filled as to require a change. The duct leading from the filter room under the ground to the furnace is made of brick laid in cement mortar, so as to prevent it from being flooded from outside. Its large size gives ample opportunity for it to be readily cleaned and given a fresh coat of whitewash every fall.

NATURAL GAS FUEL.

A great convenience is the use of natural gas for fuel, thus avoiding the dirt incident to the putting of coal into the cellar, removing the ashes and attending to the fire. Besides it has the advantage of a steady, even temperature in the furnace throughout the whole 24 hours. The burner is of the mutiple Bunsen type, 18 burners being connected to three ¾-inch pipes adapted to supply gas to the burners through a mixing chamber. These three pipes are all connected together at the point of supply, on which there is, in addition to the regular stop cock, a Langsenkamp thermostat and a by pass for the pilot light. The burners are placed in three rows of six each, at a distance of 9 inches apart each way. The top of the burners is 37½ inches from the top of the combustion chamber, and they burn with a flame 4½ inches in hight, which spreads so as to fill the fire box with one continuous sheet of intensely hot flame.

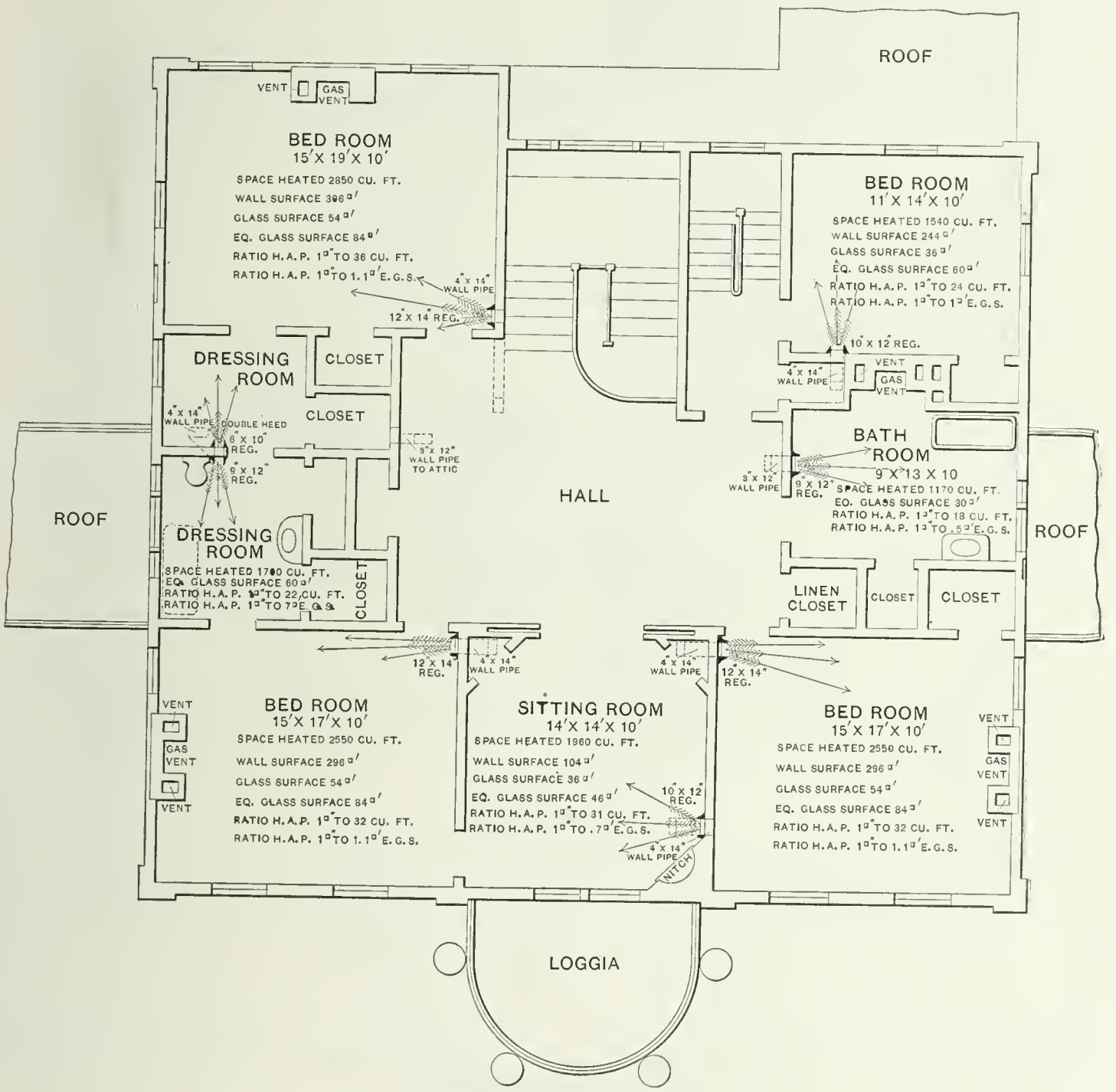

ROOF
VENT
GAS VENT
BED ROOM
15′X 19′X 10′
SPACE HEATED 2850 CU. FT.
WALL SURFACE 396 □′
GLASS SURFACE 54 □′
EQ. GLASS SURFACE 84 □′
RATIO H.A.P. 1 □″ TO 36 CU. FT.
RATIO H.A.P. 1 □″ TO 1.1 □′ E.G.S.
4″ X 14″ WALL PIPE
12″ X 14″ REG.
DRESSING ROOM
CLOSET
CLOSET
4″ X 14″ WALL PIPE
DOUBLE HEED
6″ X 10″ REG.
9″ X 12″ REG.
9″ X 12″ WALL PIPE TO ATTIC
ROOF
DRESSING ROOM
SPACE HEATED 1700 CU. FT.
EQ. GLASS SURFACE 60 □′
RATIO H.A.P. 1 □″ TO 22 CU. FT.
RATIO H.A.P. 1 □″ TO 7 □′ E.G.S.
CLOSET
HALL
BED ROOM
11′X 14′X 10′
SPACE HEATED 1540 CU. FT.
WALL SURFACE 244 □′
GLASS SURFACE 36 □′
EQ. GLASS SURFACE 60 □′
RATIO H.A.P. 1 □″ TO 24 CU. FT.
RATIO H.A.P. 1 □″ TO 1 □′ E.G.S.
10″ X 12″ REG.
4″ X 14″ WALL PIPE
VENT
GAS VENT
BATH ROOM
9′X 13 X 10
9″ X 12″ WALL PIPE
9″ X 12″ REG.
SPACE HEATED 1170 CU. FT.
EQ. GLASS SURFACE 30 □′
RATIO H.A.P. 1 □″ TO 18 CU. FT.
RATIO H.A.P. 1 □″ TO .5 □′ E.G.S.
ROOF
LINEN CLOSET
CLOSET
CLOSET
12″ X 14″ REG.
4″ X 14″ WALL PIPE
4″ X 14″ WALL PIPE
12″ X 14″ REG.
VENT
GAS VENT
VENT
BED ROOM
15′X 17′X 10′
SPACE HEATED 2550 CU. FT.
WALL SURFACE 296 □′
GLASS SURFACE 54 □′
EQ. GLASS SURFACE 84 □′
RATIO H.A.P. 1 □″ TO 32 CU. FT.
RATIO H.A.P. 1 □″ TO 1.1 □′ E.G.S.
SITTING ROOM
14′X 14′X 10′
SPACE HEATED 1960 CU. FT.
WALL SURFACE 104 □′
GLASS SURFACE 36 □′
EQ. GLASS SURFACE 46 □′
RATIO H.A.P. 1 □″ TO 31 CU. FT.
RATIO H.A.P. 1 □″ TO .7 □′ E.G.S.
10″ X 12″ REG.
4″ X 14″ WALL PIPE
NITCH
BED ROOM
15′X 17′X 10′
SPACE HEATED 2550 CU. FT.
WALL SURFACE 296 □′
GLASS SURFACE 54 □′
EQ. GLASS SURFACE 84 □′
RATIO H.A.P. 1 □″ TO 32 CU. FT.
RATIO H.A.P. 1 □″ TO 1.1 □′ E.G.S.
VENT
GAS VENT
VENT
LOGGIA

Fig. 2.—Plan of Second Floor.

The thermostat, made by Langsenkamp Brothers, Indianapolis, Ind., is so arranged as to shut off the gas supply when the temperature in the house rises above 70 degrees and turn it on again when the temperature falls below 70 degrees. In use it has demonstrated its efficiency by maintaining a temperature that has not varied throughout the season more than 2 degrees. The

pilot light is kept burning continuously to light the burners after the supply has been cut off from them by the thermostat and is turned on again.

THE COST OF FUEL.

The cost of gas in that vicinity is 20 cents per 1000 cubic feet, and the average cost of gas for keeping an even temperature in the building has been about $16 per month throughout the season, which compares very favorably with what hard coal would cost for heating such a building. Moreover, by the use of natural gas and a thermostat all the labor and care of attending the fire is avoided. Taking $16 a month as the average cost for heating, the cost of fuel is 53 cents per day, and at 20 cents per 1000 for gas this would make a consumption of a little over 2500 feet for 24 hours, or 100 feet per hour. It may naturally be inferred that on the coldest days of the winter a larger quantity of gas is burned, while in the milder months of the fall and spring a much less quantity is used. In fact, it is stated that on some days less than 1400 feet of gas was burned.

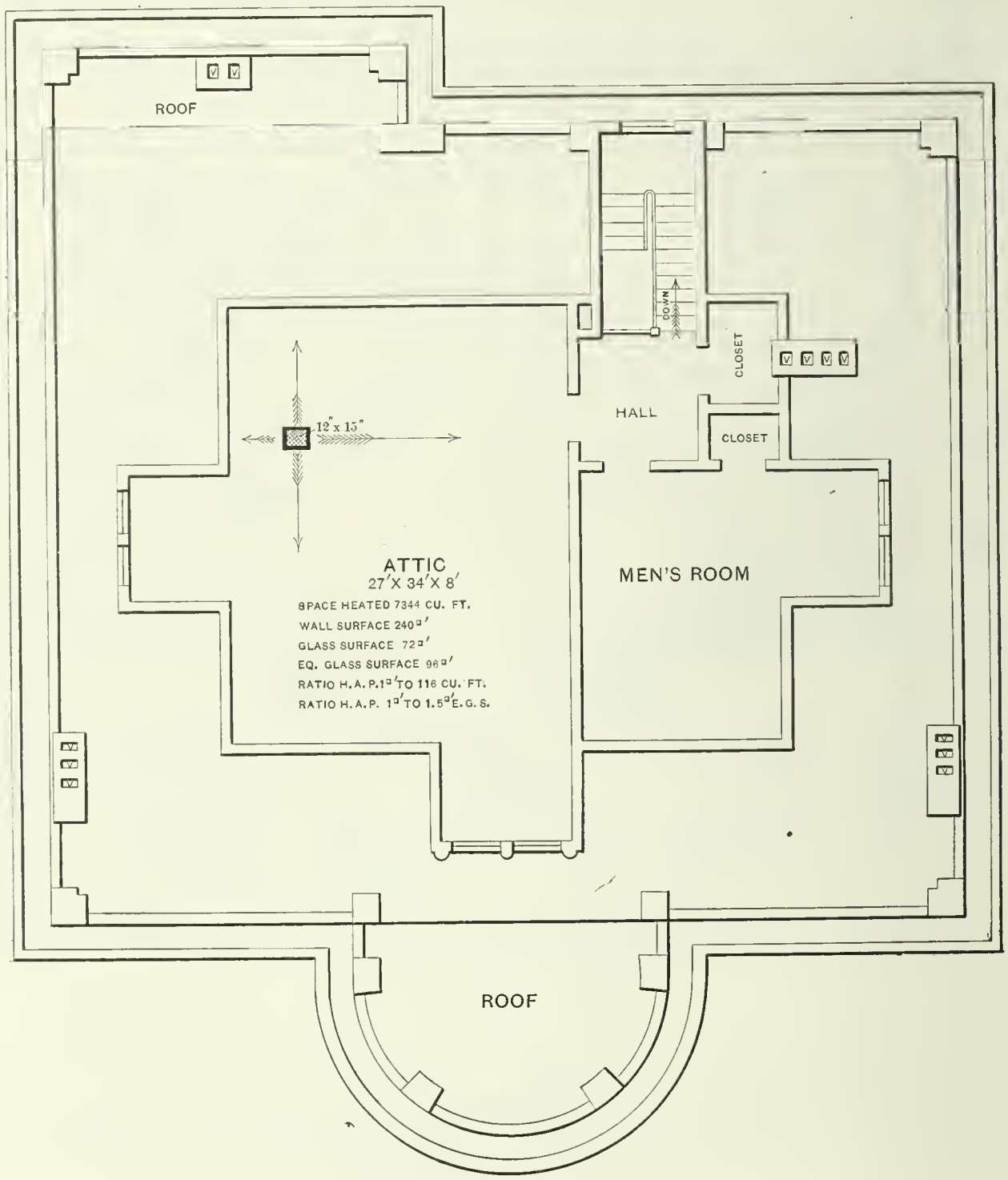


Fig. 3.—Plan of Third Floor.

THE FURNACE.

While the construction of the furnace shows it to be especially adapted for the use of natural gas, the construction of the burner is such that in case of failure of the gas supply it can be readily removed and either hard coal, soft coal or wood can be burned in the furnace. The fire chamber is 23 x 41 inches in size and provided with a grate of the labor saving variety. The furnace consists of a horizontal cylinder of heavy steel, 45 inches in diameter, resting horizontally on the cast iron front, with a suitable support at the back. Within this cylinder are the fire chamber, the grate and the ash pit, so arranged that the entire surface of the cylinder is efficient in heating, a part being exposed to the direct rays of heat from the fire chamber, while all the products of combustion rising out of the fire chamber must pass down under it and around the indirect draft partitions to the bottom, whence they run to the back and escape to the flue. Thus all parts of the cylinder are well heated. Air, in passing through the furnace, comes in contact with the surface at a higher temperature as it rises, leaving the hottest surface as it flows into the hot air pipes. This cylinder is inclosed in a double casing, the outer casing being composed of galvanized steel. There is at the most contracted point an air space having an area more than equal to the combined area of the hot air outlets.

RELATIVE PROPORTIONS.

In order that a comparison may be made of the system and the work done, the dimensions of the various parts are given as follows: The grate has an area of 943 inches, or 6.5 square feet. In this system this space is filled with a flame of intense heat from the gas. The

steel shell which incloses the fire chamber has an area of 81½ square feet, and the space heated in the building amounts to 45,555 cubic feet. The space heated exposes a wall surface of 3418 square feet and the windows expose a glass surface of 855 square feet, and on a basis that the cooling effect of 10 square feet of wall is equal to 1 square foot of glass, the equivalent glass surface is 1187 square feet. The grate surface bears a proportion of 1 square inch to 48.3 cubic feet of space heated and to 1.2 square feet of equivalent glass surface exposed, or a proportion of 1 square foot to 12½ square feet of heating surface exposed in the furnace, to 182 square feet of equivalent glass surface exposed and to 7008 cubic feet of space heated. The heating surface exposed by the furnace, which is 81½ square feet, bears a proportion of 1 square foot to 459 cubic feet of space heated, and to 1.4 square feet of equivalent glass surface exposed. The hot air pipe area bears a proportion of 1 square inch to 32.4 cubic feet of space heated, and to 0.8 square foot of equivalent glass surface. Each of the hot air pipes has a damper at the furnace, so that the pipe may be shut off or the flow of air through it regulated, as may be necessary.

VENTILATION.

In operation only fresh air from the outside has been used, and in addition to supplying the house with fresh, pure air, vent flues have also been provided in all the principal rooms. In these flues gas jets are kept burning continuously to keep the flues warm, so that they may have a good draft. An ornamental grate front is provided, the outlet to which has a slide damper, so that the amount of air exhausted by the vent stacks may be under control. The gas burner used in these flues is a simple one-jet burner to generate heat and is connected with a ¾-inch pipe, so that an ample supply of gas to the burner is insured. The size of these vent flues in most of the rooms is 6 x 12 inches, having an area of 72 square inches, but the heat generated by the burner is sufficient to secure an exhaust of air from the rooms amounting to very nearly the inflow from the hot air pipes. By this means a continual change in the atmos-

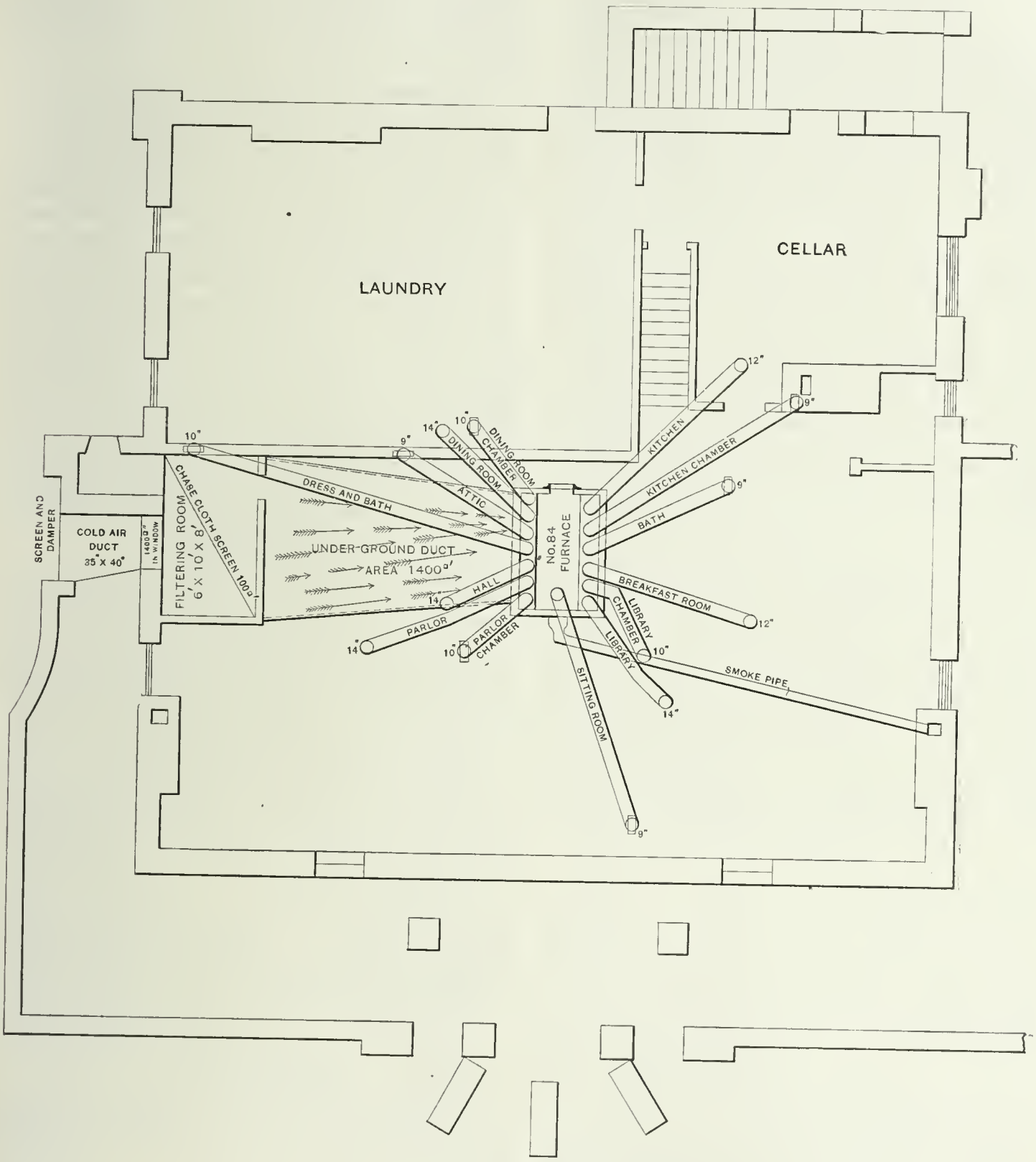


Fig. 4.—Plan of Basement, Showing Piping, Cold Air Supply and Filter.

phere of the building is effected, the heavier vitiated air being removed to make room for the inflowing fresh, warm air. By taking the air in at so low a temperature as 140 degrees and continously exhausting it any artificial moistening of the air has been found unnecessary. This heating and ventilating system has been in satisfactory operation during the past winter.

A MAGNIFICENT STOVE CATALOGUE.

What is probably the finest stove catalogue ever issued has just been brought out by the Michigan Stove Company of Detroit, Chicago and Buffalo. The company have distinguished themselves in the past by the excellence of their publications, which have invariably ranked among the most artistic contributions to trade literature. This year they evidently concluded to outdo themselves and they have done it. The new catalogue is in every respect a magnificent specimen of the book maker's art. It is of different shape from the ordinary catalogue, the page being 10 x 12 inches. The size of the page is well calculated for the use of large engravings, bringing out the details of the goods with much greater clearness than could be done with small cuts. The book comprises 176 pages and is bound in heavy boards, in scarlet cloth, with the company's name on the side heavily embossed and surrounded by a broad silver border. In addition to the bound pages an illustrated price book consisting of 80 pages is found in a pocket attached to the inside of the back cover. Inserted loosely in the book is a beautiful engraving of Jeremiah Dwyer, president of the company, taken on the fiftieth anniversary of his connection with the stove business in Detroit. This fine portrait of the esteemed president will undoubtedly be treasured by the patrons of the company.

A notable feature of the catalogue is the character of the title page and of the illustrated pages which mark the division of the book into various departments, according to the character of the goods. These pages bear fine engravings, the title page showing a picture of Vulcan framed in a laurel garland, having on one side the obverse of the first prize medal awarded to the company at the Paris Exposition of last year and the reverse of the medal on the other side. The pages marking the different departments are also suggestive of the Paris Exposition. An index of the telegraphic code words used in the price book forms the first page of the contents. This is followed by a beautifully illuminated page which reproduces the guarantee of the company, a copy of which is packed in every Garland stove or range. Next come remarkably fine views of the company's great works at Detroit and of their Western headquarters at 256 to 262 South Clinton street, Chicago.

The first department of the catalogue is that devoted to steel ranges and cook stoves and opens with an illustration of the company's lowest priced line of steel ranges, passing gradually to the most elaborate and expensive construction. The ranges which are shown in this department consist of the Surprise, Success, Special Garland, Jr., Savoy Garland, Jr., Staple Garland, Jr., New Empire Garland and Empress Garland. The department closes with an illustration and description of the Sunrise Garland steel cook.

Cast cooking stoves for soft coal or wood form the next division, these beginning with a low priced line and progressing to the higher priced goods. The stoves shown consist of the Ironton Garland, Jr., New Iron Garland, Jr., Iron Age Garland, Kitchen Garland, New Family Garland and Western Garland. In connection with these stoves illustrations are given of some of the special details, such as the method of ventilating the oven, the construction of the goose necked flue, the direct draft damper used and the double locked long centers. These are not only features of the cook stoves but of the ranges made by the company.

Cast ranges for soft coal or wood comprise the next department. The goods here shown consist of the Iron Garland, Jr., Standard Garland, Superb Garland and Crystal Garland. A lithograph in colors strikingly represents the fine finish of the aluminized oven used. A fine line of cast ranges for hard coal or wood come next and comprise the Phœnix Garland, Victor Garland, Puritan Garland and New Champion Garland.

Cast cooking stoves for wood only is a separate division, which includes the Oakland, Woodland, New Wood Garland, Jr., New Home Garland, Sylvan Garland and Atlantic Garland. Among the illustrations in this division is shown an original Detroit stove, made by Jeremiah Dwyer & Co. in 1861, before the incorporation of any of the Detroit stove companies. Although this stove was made 40 years ago, it would to-day be pronounced a very handsome stove, fit to adorn any line of samples. Cast ranges for wood only are shown in the next division, and comprise the Wood Garland, Jr., New Home Garland, Household Garland and Century Garland.

Base burners for hard coal or coke form a department which is specially beautiful in the character of the goods shown, their handsome decorations and the ingenuity with which details of ornamentation as well as construction have been perfected. The base burners comprise the Art Garland, Jr., Art Garland Modeled Series, Sunlight Garland, Art Garland Home Series, Art Garland New Series, Art Garland Duplex Series and Art Garland Reflector Top.

Oak stoves constitute an important department, as the company claim to have the largest and finest assortment of these stoves in the world. The goods shown are the Oak Garland, Jr., Oak Garland, New Oak Garland and Front Flue Oak Garland. Hot blast and self feeding heaters for soft coal constitute another department, embracing the Hot Blast Garland, Magic Garland, Solar Garland, Radiant Garland and Retort Oak Garland. The Retort Oak Garland is a self feeding stove which has remarkable fire keeping qualities, giving it all the advantages in that respect of a hard coal base burner. The stove is beautifully finished and is so elaborately decorated that it forms almost as ornamental a piece of furniture as a hard coal base burner.

Heating stoves for coal is a department in which are grouped the Carbon Garland, Avon Garland and Novel Garland, the last named being a Franklin stove. Heating stoves for wood is a department in which are shown the Hickory Garland, Jr., Rose Garland, Ivy Garland, Jr., Fireside Garland, Premium Garland, Yale Garland and Horizontal Oak Garland. These cover all classes of wood stoves, such as the box, cottage, air tight, base heating and revertible flue constructions.

Attention is specially called to the protective system of numbering, copyrighted by the company, which makes their system of numbering cooking goods distinctive, preventing other makes of cook stoves or ranges with small sized ovens from being compared with supposedly similar sizes in Garland goods.

Elaborate as this catalogue is it is not the only evidence presented this year of the Michigan Stove Company's enterprise. The catalogue is simply a fitting messenger to inform the trade of the very great preparations which have been made by the company for this year's stove business. We understand that they have revolutionized their entire line of stoves and ranges. New patterns and new dresses have been provided and the result is an array of brand new goods such as even this company never before presented for the consideration of stove buyers. The high standard of the catalogue, therefore, may be regarded as simply one of the essentials of the conduct of the company's business this year.

W. G. Withers and W. F. Habicht, two of the representatives of F. M. Borden & Bro., Philadelphia, Pa., are enjoying a well earned vacation at Atlantic City, N. J. Mr. Withers had just returned from a seven weeks' tour in the South, and Mr. Habicht from a six weeks' trip through Pennsylvania among the Stove trade. They report the outlook for the coming season in the Stove trade as good as they ever knew, both having exceeded their sales of any previous year up to this date. With their wives, Messrs. Withers and Habicht caught 214 crabs in one trip from Atlantic City and enjoyed a voyage on the steam launch of Robert M. Gibb, who is a Stove dealer at Second and Bainbridge streets, Philadelphia.

Eclipse Stoves and Ranges.

"A Booklet on Steel" is the title of a publication which is being distributed among the trade by the Eclipse Stove Company of Mansfield, Ohio. The matter treats of the Triumph Eclipse and the Surprise steel ranges, and the Astral Eclipse steel cook stove. Brief descriptive particulars accompany the various illustrations, also tables showing the number of sizes in which the goods are made, the oven dimensions, and the size of the fire box. In addition to the goods enumerated, attention is given to the Cyclone Eclipse hot blast; the Wonder Eclipse, a new sheet iron air tight circulator; the Prize Eclipse, a wood air tight, and a variety of oak stoves, which are offered under such names as the Perfect Eclipse, Mars Eclipse, Century Eclipse, Emery Eclipse, and the Sun Eclipse.

Accompanying the booklet is a four-page folder illustrating and describing the Lustrous Eclipse, a new hard coal double heating base burner of handsome exterior. The base flue is circular, thus securing, it is claimed, the greatest benefit of the fire in the heating of the exterior of the base. The hot air flue which takes the cold air from the floor occupies the space between the up and down back flues, thus deriving heat from them on two sides and from the fire direct on a third side. The result is a strong current of highly heated air, which can be utilized to warm the room above, or if desired, can by means of a damper of novel design be thrown into the room in which the stove is placed. The grate is of the Ransom duplex type with rotating outside ring. The fire pot is heavy and can be removed through the lower mica doors without loosening a bolt. The stove is made in two sizes and has fire pots 14 and 16 inches in diameter respectively.

Twin Burner Stoves.

We have received from the Twin Burner Vapor Stove Company, 206 to 210 South Seventeenth street, St. Louis, Mo., a copy of the catalogue which they have just issued for the season of 1901-1902. It consists of 40 pages of letterpress profusely illustrated and bound in deep red covers with embossed side title in old gold. The goods shown cover an interesting assortment of steel ranges as well as cast goods embodying the modern improvements. Among the features enumerated in connection with the Twin Burner steel range are heavy covers and centers, asbestos linings, ventilated oven finished in aluminum enamel, which prevents rusting; cast iron flue back, which the manufacturers claim tends to prevent eating out by creosote, and a body made of triple walls. Under the same name the company offer a steel cook stove for burning coal and also for burning wood. Among the cast goods may be mentioned Our Pride, Crown, Princess, Eureka and Ideal cook stoves. The heating stoves are represented by the Hot Blast for burning hard or soft coal, the National, a laundry stove for coal, and a line of air tights, which include the Queen City and the Banner.

ODD PLATES.

Carey A. Moore is making a trip through the Virginias in the interest of the Acorn line of Stoves and Ranges, made by Rathbone, Sard & Co., Albany and Aurora, N. Y. He reports a fair trade for the season and a growing popularity for the Acorns he is sowing along the line.

Southard, Robertson & Co., 257 Water street, New York, are sending to the trade two circulars showing goods that should be interesting at this season. One is devoted to the Flag Cylinder Stove, which is made in sizes from 8 to 12 inches with illuminating anti-clinker door, draw center shaking and dumping grate, top cover and sliding top. The base is so made that the cylinder fits ash and dust proof. The other circular shows several sizes of the Girard Range, which is made with high shelf, reservoir and end ash pit and is furnished with water back. It is made with 7, 8 and 9 inch covers and with oven 16, 18 and 20 inches square. The Range is of attractive design and is full nickeled.

The Richardson & Boynton Company, New York, have just made a shipment to Holland of two of their Perfect Hot Air Furnaces with complete equipment of piping, register boxes and registers; in fact everything necessary to set the furnaces up for operation. They have also furnished complete working plans and detailed drawings for the guidance of the foreign workmen, as well as full written instructions for setting up and operating the hot air system of heating.

The showroom of Isaac A. Sheppard & Co., at 312 Pearl street, New York, has been arranged with an attractive display of heating goods. The Fern is a very pretty sheet iron cylinder stove, and the Magic Base is made with both black and planished iron bodies, direct draft and revertible flue. The concern announce that they have a supply of these goods in stock and that the shortage in sheet iron will not interfere with shipments being made promptly. The Comet, a handsome square Stove, also made as a double heater, to heat an upper room with hot air by means of a register, is another Stove displayed. It is full nickeled and well calculated to please the buyer.

Schellhammer & Son, Warren, Pa., report that their Pennsylvania Gas Furnace trade is rapidly increasing. These Furnaces are finding their way into the hands of high-class Furnace dealers, who heretofore looked upon the Natural Gas Furnace as an experiment for the reason that many were such, whereas the Pennsylvania has proved its success wherever installed under instructions of the manufacturers. The Furnace was originated and patented by C. Schellhammer, and all Furnaces are manufactured under his supervision. Having had 30 years' study and practical experience in this branch, during which time he has had extensive correspondence from considerable territory bearing on the subject of the adaptation of the Gas Furnace to the varied requirements of buildings, he has been enabled to solve many knotty problems in heating. The house are always ready to assist their customers in devising plans that will heat any building by natural gas.

The value of exports of Stoves and Ranges from the United States in the fiscal year ended June 30, 1901, is given in the official figures of the Treasury Bureau of Statistics, just issued, as $548,716, as compared with $535,385 in the preceding fiscal year, and $503,739 in the fiscal year 1899.

The works of the Gem City Stove Company at Dayton, Ohio, were visited by a fire on August 2, which destroyed the machine shop, foundry and storeroom. The loss is partially covered by insurance.

Edwin A. Jackson & Bro., 50 Beekman street, New York City, have issued their 1901-2 catalogue of the Jackson Ventilating Grate. The merits of this device are set forth at considerable length, illustrations being presented showing the old and new way of heating by means of an open fire. Much that is of general interest in connection with heating is to be found within the covers of this 40-page catalogue, and in addition there are illustrations of Andirons, Fire Sets, Portable Grates, Dampers, Door Knockers, &c.

We have been favored with an invitation from W. T. Leckie, representing the Estate of P. D. Beckwith, manufacturers of Round Oak Stoves and Furnaces, Dowagiac, Mich., extending the hospitality of their rooms at the Cadillac Hotel, Detroit, Mich., during the annual meeting of the Michigan Retail Hardware Dealers' Association, which occurs in that city on the 14th and 15th inst. The invitation is printed on a large card folded into two leaves, one of which bears a representation in colors of the now famous Indian, "Doe-Wah-Jack."

The Grander Stove Company, Royersford, Pa., have resumed operations after a month's shut down for the usual inventory and repairs.

The McClary Mfg. Company, London, Ontario, are sending out to their friends in the trade an eight-page folder, calling attention to some of the leading lines of Oil Stoves which they are prepared to furnish. Among these may be mentioned the Famous Coal Oil Heater, every part of which is of sheet metal, and which is especially adapted for the heating of a bedroom, dining

room, office, &c.; the Novelty Blue Flame Wick Oil Stove, the Dangler Wickless Oil Stove, made with high and low frame in a variety of sizes, and the Summer Queen Oil Stove, made with two burners and having extension top. The company refer in our advertising pages this week to their Yukon Triple Heater, which is claimed to be "as powerful as a small furnace and much more economical." It burns wood 30 inches long, and the products of combustion travel the length of the Stove three times before entering the smoke pipe.

The Excelsior Steel Furnace Company, 38 West Monroe street, Chicago, are announcing that owing to the strike and the increase in price of tin plate and sheet iron their quotations on Furnace Pipe, Fittings and Adjustable Elbows are withdrawn and that new prices will be furnished from time to time as required. They report a large stock and suggest the advisability of ordering Furnace Casings, Conductor Pipe, Eave Trough and Supplies while they can be shipped promptly.

Ross & Kontny, 153 to 159 South Jefferson street, Chicago, managers of the Western branch of the Reading Stove Works, are enjoying an extremely active trade in their Sunshine line of heating apparatus. They have already sold more Steam and Hot Water Boilers this year than were sold through the Western house of these works in all previous years put together. Their Furnace trade also has been heavy, practically double that of last year. They have found the demand running toward the best grades of heating apparatus. The cheaper styles are neglected, which shows that consumers are not looking for lowest prices, but are endeavoring to get best results. They further have no complaint to make of their Stove business, which is keeping quite up to last year's volume.

Stove and Hardware Dealers.

The J. M. & L. A. Osborn Company, Cleveland, Ohio, in a circular letter to the trade announce that they are ready to take care of orders at their new location, 26 to 36 Viaduct. While they are not entirely settled, the company still feel that they can give their customers much better service doing business at one place rather than having their force divided between the old and the new locations. They urge as a special favor that customers will telephone orders ahead whenever possible, so that they can have the goods laid out and ready for immediate delivery when called for.

Henry N. Clark & Co., 56 and 58 Union street, Boston, Mass., in a circular advise the trade that they are the New England agents for the American Stove Board Company, and that they carry a full stock of all sizes of Crystallized, Aluminum, Embossed, Oxldized, Zinc, Mosaic and Onyx Stove Boards. The firm also carry the Aluminum Bargain and Rival Oil Heaters, and are prepared to fill all orders for these goods promptly.

The Retail Stove and Sheet Metal Workers' Association of Wilmington, Del., organized recently with the following officers: President, Isaac S. Bullock; vice-president, Edward Davis; secretary, William J. Johnson; treasurer, George L. Stradley; trustees, William Alexander, William Gallagher and Charles H. Blaine. The organization has 18 members and its object is to benefit the trade and their customers.

Joseph M. Lydon, Harrisville, Ohio, informs us that he is about to sell out his Stove and Hardware business, on account of advancing years. Mr. Lydon adds that he has been a regular reader of *The Metal Worker* since its first issue, and has been identified with the trade for more than 40 years.

Kilbourne & Jacobs Mfg. Company, Columbus, Ohio, have just issued their general catalogue No. 33, of 84 pages, relating to Drag and Wheel Road Scrapers, Bolted Wheelbarrows of all kinds, Contractors', Railroad and Grading Plows, Tubular Steel Dirt, Mining, Foundry, Coal and Coke Barrows, Contractors', Railroad and Farm Dump Carts, Wrought Steel Sinks, Pressed Steel Shop Pans, &c. They call special attention to the many additions to and improvements in former lines since the issue of their last catalogue. They also issue catalogue No. 7, of 128 pages, relating to Trucks, including Baggage Barrows, Depot Express Wagons, Push Carts, &c., and catalogue No. 31, 72 pages, relating to small Cars of all kinds, Contractors' Dump Carts, Steel Ore and Mine Cars, &c.

We are advised by the White Mountain Freezer Company, Nashua, N. H., that the daily newspaper accounts of the fire in that city on the 26th ult. were greatly exaggerated so far as their loss was concerned. The company are in a position to execute all orders promptly. They luckily escaped with the loss of their foundry building and one or two other small buildings of less importance. They succeeded in saving the balance of their plant, and business has not been interrupted in the slightest degree.

Louis Stanton, Frostburg, Md., is one of the enterprising dealers in that section. He carries a fine line of Stoves and Ranges, with a fair sprinkling of Rathbone, Sard & Co.'s Acorns among them. His stock includes general Hardware, Guns, Ammunition, Cutlery, Rope, Oils, Paint and all kinds of Vehicles. Mr. Stanton has a large trade in the surrounding country and has opened a branch store at Lonaconing.

Geo. H. Oetzel, who has been identified for nearly 23 years as manager of the Hardware department of the A. H. Foster Company and their predecessors, A. H. Foster & Co., Foster, Wilkins & Co. and Foster & Wilkins, Union, S. C., will succeed to the Hardware business of that company about September 1. He will occupy three floors and will carry a full stock of Shelf and Builders' Hardware, Agricultural Implements, Stoves and Kitchen Furnishings, and also Paints, Oils and Varnishes. Mr. Oetzel will be pleased to receive catalogues, price-lists, &c., relating to the above lines.

The Hunter-Harris Company, Rising Sun, Ind., have disposed of the grocery part of their business and will hereafter devote their exclusive attention to the sale of Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements and Sporting Goods.

Fox Bros., Pine Bluff, Ark., whose business was established in 1882, have incorporated under the style of Fox Bros. Hardware Company, the capital stock being $100,000. The personnel of the concern continues unchanged. They do a wholesale and retail business in Shelf and Heavy Hardware, Tinware, Agricultural Implements, Stoves, Sporting and Athletic Goods, &c.

F. W. Cole, Ethan, S. D., has admitted a partner in his Hardware and Stove business, and the style is now Cole & Buckles. The firm are erecting an addition to their main building and will devote it to tin shop purposes.

Atkinson Hardware Company, wholesale Hardware, Stoves, Tinware, Farm Implements, Wagons and Buggies, Fort Smith, Ark., have been succeeded by Atkinson-Williams Hardware Company, who will continue at the old stand. The company report that the year closing June 1 showed the largest business in the history of their house, and with additional storage room and better facilities for handling goods they contemplate a marked gain for the present year on the one just ended.

On July 6 the entire business portion of Versailles, Ohio, was destroyed by fire. Among the stores burned out was the Hardware establishment of Manier & Pequignot, which firm have since been dissolved. The business will be continued by Joseph Manier, Jr., who will be pleased to receive catalogues and other matter pertaining to Hardware, Stoves, Tinware, Farming Implements, Bicycles, &c.

Manufacturers of Stoves and heating apparatus and supply houses will be interested in a new 40-page catalogue just issued by the Kirk-Latty Mfg. Company, Cleveland, Ohio. The index is divided under the heads Bolts, Tapped Nuts, Stove Rods, Screws, Rivets, Tacks, Nails and Taps, and the illustrations show a variety of Bolts, Nuts and Screws specially adapted to the requirements of Stove makers. Sink Bolts, Carriage, Tire and

Pin Head Bolts, Iron and Brass Machine Screws, and a variety of special Square, Round, Countersunk and Slotted Bolts and Screws are presented. One section of the catalogue is devoted to Tacks of all kinds, priced in bulk and put up in little barrels in cabinets for retail use. The company also make Clout, Finishing, Trunk, Basket, Chair and Cigar Box Nails.

LITCHFIELD & COLE are successors to Litchfield & Frazer in the Hardware, Stove, Wagon and Buggy business in Lone Oak, Texas.

A "KEEP COOL" WINDOW.

BY INSPIRATION.

When the recent hot spell made physical effort of any character almost unbearable it was fortunate that mental activity could be indulged in while seeking such comfort as could be found in absolute quietude. It has been my custom to endeavor to turn whatever caused me inconvenience, annoyance or discomfort to profit whenever possible. So when a desire for relief from the intense heat suggested to my mind many things that would make life more pleasant, even if the scorch continued, I concluded that these suggestions should materialize in the form of a "keep cool" window, which would bring me customers, profit and popularity in suggesting a means by which other people might find relief from the heat.

A "Keep Cool" Window.

After the cool of the evening set in I told two of the clerks that I would stand treat for all the ice cream they could eat if they would aid me in preparing an attack on the pocketbooks of my customers by helping to erect the fortifications. One was set to removing everything that had been in one of my show windows, while with the other I selected the materials for my display. I decided that in one corner, at the back, I would have a pyramid of water coolers of different sizes, and in the opposite corner I would have a refrigerator with the lower door open, showing some lettuce, cucumbers, lemons, raspberries and other things that would be inviting to the appetite during a hot spell. For a background I had a pyramid of ice cream freezers, the bottom row being composed of large freezers, smaller ones being used for the top. A little 1-pint freezer, suitable for use in making ice cream at the tea table, was at the very top. Across the window, above the pyramid, I had a Mexican grass hammock, light blue in color. From the hammock I hung a variety of fans, from the large sized palm leaf "Sabbath Day cooler" to the grotesque Japanese spread and folded fans. I placed near the center of the window a big "take me home for 98 cents" folding leg dress-maker's table. On this I placed a large bright dish pan, and, suggestively alongside of it, a pile of lemons, lemon squeezers, knife for cutting the lemons, ice pick, cork screws, several two-story tumblers, a tin shaker, such as is used for mixing cool drinks, and a bundle of straws.

In one glass I had red lemonade with a slice of lemon floating in it, and two straws sticking invitingly out of the top. In another I had orangeade with some raspberries floating in it. In another was lemonade with a slice of orange and a couple of strawberries in it, and near at hand was a big box of sugar. On the other end of the table I had a large japanned tin waiter on which was arranged several saucers with tin spoons, alongside of which was a bundle of cheap tin teaspoons wrapped in blue tissue paper, suitable for picnic parties. Beside this waiter was an ice cream freezer with the top and crank taken off, and conveniently at hand was one of those funnel shaped ice cream measurers. Several big tin spoons, suitable for dipping out the ice cream, and one of the new wrought iron, tinned, with wooden handle ice cream scoops. To carry the illusion further I had a bright young mason to ladle me out some "white coat" on the saucers in such a manner that it looked very much like hard ice cream. There was ample space on the table for several styles of ice picks, individual ice cream molds, also larger forms, such as are used for gelatine and puddings. Sticking out of the lemonade pail was the bent handle of a tin dipper, and on the table beside it was a dipper of another style, also a very handsome Britannia dipper with an ebony handle.

In front of the table, where it could readily be seen, was an ice cream freezer with the crank taken off and all ready for receiving a batch of material to be frozen. On a piece of rough burlap was a big chunk of glass and several smaller pieces, which I was able to collect, to resemble ice; and conveniently at hand I put a pair of ice tongs, an ice pick, ice hatchet, two different styles of ice shavers, chippers and an ice maul, then a small bag of coarse salt, with some ice cream molds, milk pails and other suggestive tinware.

When we had got thoroughly into the spirit of arranging this "keep cool" window the boys showed considerable interest and put in a number of other little things that had escaped my mind, as coarse graters and nutmeg graters. One thought that we ought to have a pineapple to suggest pineapple water ice, and when the work was completed the best compliment we received was from a stout old gentleman, who stopped to look at it, and said it had entirely changed his feeling. Instead of feeling hot he felt for his pocketbook to see whether he had money to buy an ice cream freezer and some of the lemonade and paraphernalia we had shown.

White Enamel Refrigerators.

A dainty catalogue has been issued by the White Enamel Refrigerator Company of St. Paul, Minn., descriptive of their special line. The company manufacture a refrigerator having the provision chambers lined with white enamel, which not only presents a neat and attractive appearance, but makes the interior so light that the contents can easily be seen and at the same time enables the walls of the chambers to be very easily cleaned. Another feature of these refrigerators is the use of Bohn's patent dry air siphon system, owned by the company. By this system the cold air passes through a galvanized iron grating in the bottom of the ice chamber into the provision chamber, rising through the opening provided for the shelves, and is drawn back through the siphon into the ice chamber and through and around the ice, causing all vapors and odors given off by the provisions to condense and become deodorized, leavlng all impurities to pass off through the drip pipe with the water from the ice. The company state that by this system they are enabled to secure an average temperature in their refrigerator of 38 to 48 degrees. They further state that those figures can be reduced, lf desired, to a point below 32 degrees by the use of rock salt in the chamber.

The styles shown comprise a full variety of sizes for domestic purposes and large sizes for the use of grocers and restaurant keepers. A speclal slze is made, intended for flats or apartments with limited floor space. The catalogue contains a number of testimonials, showing the high esteem in which the refrigerators are regarded by those who have used them, these testimonials including railroad companies. who have equipped their dining, buffet and refrigerator cars with the Bohn siphon system.

Wire Wound Cast Iron Pipe.

M. Jacquemart, the managing director of the Société Metallurgique d'Aubrlves et Vllleruplt, France, has introduced the system of winding steel wire, under pressure, round the extremities of the plpe and ln grooves cast in the body of the pipe. The idea of shrinking steel bands onto cast iron cylinders is very ancient, but the problem was to find some method whlch would cause the bands to follow exactly the shape of the parts to be enveloped and exert an even pressure throughout. Thls is accomplished by the method of winding above referred to. In the manufacture of pipe all complicated machinery must be rejected, and it was therefore essential to provide a method of winding whlch, while being perfectly simple in its application, would secure perfect uniformity of tension in each wire wound round. M. Jacquemart started from the fact that a steel wire of uniform dlameter has a constant resistance throughout lts length. He devised a method by which the wire is passed through a draw plate, which reduces it to a certaln fixed diameter. Winding at an equal and constant pressure is effected by revolving the pipe, the wire first passing through the draw plate above described under the desired amount of tenslon. Another important point is the bedding of the ends. This ls effected by shaplng the edges of the grooves so that the wire can be bedded into them and thus be securely fixed; and for greater security molten tin is poured over every end. Asphalt is put on at high temperature, which penetrates the spaces between the coils and completely covers them. Experiments with these steel bound pipe indicate that with them lt is possible to avoid a burst with a large main. Their behavior under such conditions as sudden and instantaneous shocks shows that pipe of this type is proof agalnst a burst, and that even when strained to the point of fracture the damaged parts remain in thelr original posltlon. A cast iron main of this type 78 inches in diameter has been laid by the water company of Paris.

Ground was broken on Tuesday preparatory to the construction of the third new East River Bridge, which ls to connect Manhattan with the Williamsburg section of Brooklyn.

The Heating Trade in the West.

The Western heating trade has seldom, if ever, been more active than at present. Heating contractors are driven with business to the full extent of their facilities, and maufacturers of boilers and supplies are only llmited in their trade by the output of their factories. Great difficulty is experienced in securing pipe of sizes under 2-inch. Galvanized pipe of small diameters ls particularly scarce, and in some localities a premium is being offered for those sizes in general use. A peculiarity of the present condition of trade is the excellent demand for the best class of heating apparatus. Consumers are not shoppling so closely as in other years and do not hesitate to pay the price asked for a good boller, being evldently most desirous of securing efficient service. The trade is in such excellent condition that many things are now permitted or overlooked in the way of commercial practices which in times of dullness would cause considerable friction. The activity in building throughout the West gives promise of running lnto next year, which excites the hope in the heating trade that the good times now being enjoyed may be indefinitely extended.

The Comfort Steam and Hot Water Heaters.

To meet the varied demands of the heating trade, the Thatcher Furnace Company, 240 Water street, New York, have just put on the market a new line of steam

The Comfort Steam and Hot Water Heater.

and hot water heaters. The name "Comfort" is well chosen, as the construction enables them to be readily handled, placed in buildings and set up by the steam fitter, and to be easily managed by the owner. They are specially adapted to residence work, owing to the conveniences provided. The ash pit is strong, to support the upper parts, deep to afford ample air space under the grate, and so made as to support a grate of the labor saving, clinkerless, dumping type, which has been thoroughly tested in other apparatus. The grate can be readily removed through the ash pit door and access to its surface with a poker can be had through a slicing door. The ash pit door is of ample size and fitted with a lift door for connection with the damper regulator. The fire pot and combustion chamber are designed to present the greatest possible surface to the

fire, bring the largest amount of water into contact with hot surface, and facilitate a circulation that will insure a steady water line in the steam boilers.

The fire pot proper is corrugated to increase the fire surface, to afford free ingress of air to the fire and to keep the fire clean and at its best efficiency. The combustion chamber is high, to give space, and divided, to increase the surface overhanging and exposed to the direct rays of the fire, by inward extending lobes, as can be seen by the broken view presented herewith. The upper sections are made with a series of tapering flues to further utilize the heat of the products of combustion and to increase the surface over which the water circulates. When these sections are used they are staggered to further increase the fire travel.

The steam heaters are provided with the usual equipments of the best grade. They are made with an ample steam dome, and it is claimed that the construction insures the production of dry steam. The heaters are made with 24 and 28 inch fire pots and, by the addition of intermediate sections, in six different capacities, rated to carry 550, 610, 675, 875, 925 and 975 square feet of direct steam radiation, the piping to be included as radiation. The hot water heaters are rated to carry 900, 1000, 1100, 1350, 1500 and 1650 feet. The steam heaters run from 54 to 68 inches in hight, adapting them for use in low cellars.

THE MUELLER BOILER.

A sectional view is given herewith of a new horizontal section boiler for steam and water, which has just been brought out by the L. J. Mueller Furnace Company, Milwaukee, Wis. This boiler is made of the best grade of cast iron, is attractive in design, and the workmanship is of the highest character.

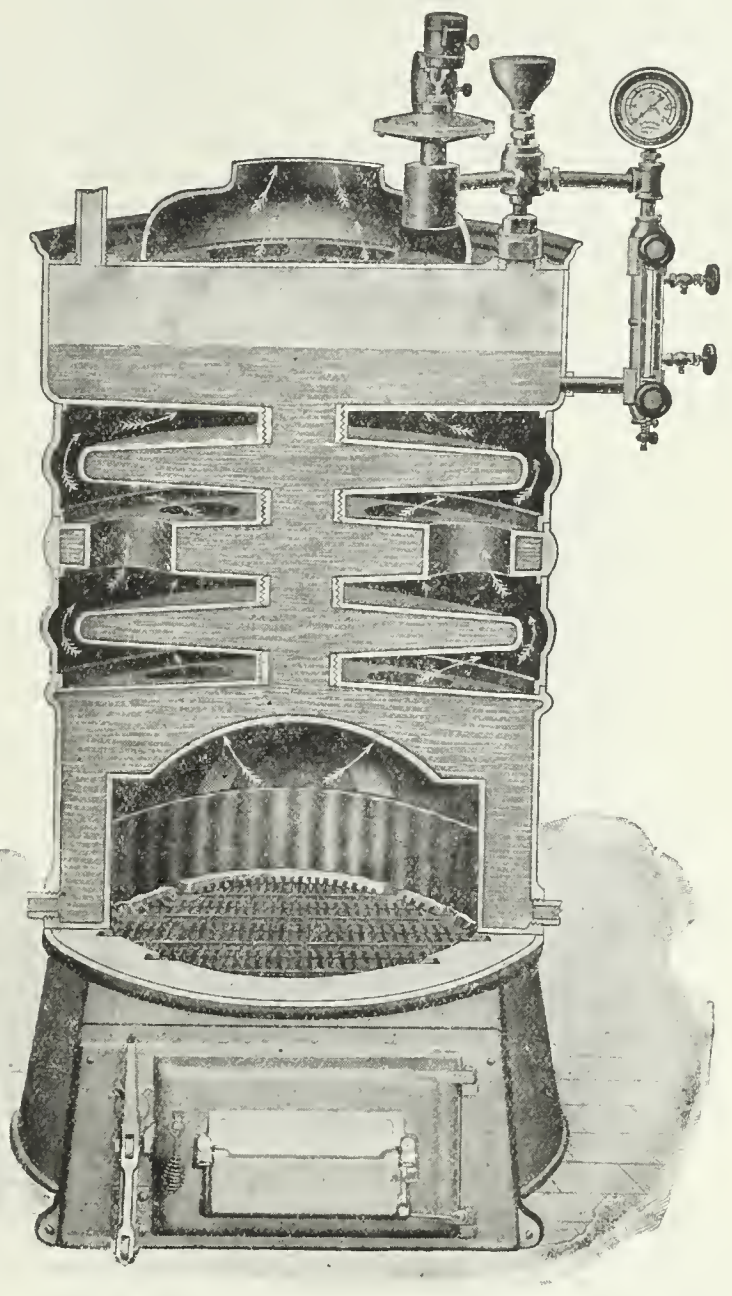
The company call special attention to the construction of the fire pot and the intermediate sections between the fire pot and the dome. In the fire pot, which is of unusual depth, the large center column is connected by radial arms with the sides to secure perfect circulation within the boiler itself. The center column and radial arms, containing a considerable quantity of water, overhang the fire in a most effective manner. The value of overhanging surface is best demonstrated by the excellent results secured, even when only a low fire is maintained. The inner surface of the fire pot is constructed with deep corrugations, thus presenting fully one-third more fire surface, backed by water, to the direct radiant heat of the fire than if constructed without these corrugations. By means of these corrugations free circulation of air is also insured at the edge of the fire.

The sections are connected by means of lathe turned screw nipples. These nipples are of ample diameter to secure free circulation within the boiler, and inasmuch as in this form of construction expansion is from the center outward, there is experienced absolutely no difficulty with broken sections, while the nipple secures a tight and lasting joint. The smaller of the sections is without flue openings, so that the gases in their travel to the smoke flue are obliged to impinge against the entire lower surface and travel completely around the outer edge of section. This makes additional fire surface. The larger of the sections is provided with flue openings of sufficient area to allow a free circulation of the gases and to avoid any clogging of soot.

Ample space is provided for steam and its thorough disengagement from the water, thus overcoming the tendency, common to many boilers, to produce an unsteady water line or throw water into the piping. Arrangements are made in this boiler for the introduction of a coil of pipe in the fire. This coil of pipe is designed to heat water for domestic purposes, and is an economical device for supplying necessary hot water during the season when the heating apparatus is in use.

The boiler is provided with a rocking and dumping grate, which is simple and effective. The grate ring has been entirely eliminated, and the base itself becomes the holder or support for the grate bars. When it is desired to dump the fire, the small check shown is given a one-quarter turn, thus releasing the connecting bar and allowing it to be drawn outward, so that the grate bars stand in a vertical position, clearing themselves immediately of all accumulations without the use of poker.

Each section, and subsequently the boiler complete, is thoroughly tested before shipment. The trade will find this an easy boiler to erect. In the water boiler, all sections above the fire pot are shipped made up. The steam boiler is shipped in the same manner, except that the dome or top section is not connected. The company



The Mueller Boiler.

are prepared to furnish 13 sizes for either steam or water, thus covering a wide range of requirements.

Champion Hot Water Combination Boilers.

A new catalogue has just been issued by Frank D. Stolz, 115 Lake street, Chicago, illustrating and describing his Champion hot water combination boiler. The Champion is a new hot water heater which will fit any furnace, thus converting it into a combination heating apparatus. The device has but recently been brought out, yet sufficient time has elapsed to enable it to win popular favor. The catalogue just issued illustrates the special features of the boiler in detail, and gives a list of the sizes made and their capacity in square feet of radiation, together with prices. Illustrations are also given of furnaces, showing the boiler properly attached to secure the best results. The Champion is made in a great variety of sizes, from a small water heater with sufficient capacity to heat water for ordinary domestic use up to a large and powerful apparatus which will furnish 700 square feet of radiation. These boilers are tested to 100 pounds hydraulic pressure before leaving the factory and are guaranteed not to leak.

The Wireton Automatic Time Draft Regulator.

An ingenious device, herewith illustrated, has just been placed on the market, which is designed to automatically turn the draft on a furnace, steam boiler or hot water boiler. It is a combination of a time draft, a draft regulator, a guaranteed time piece and an alarm clock. It can be placed either in an upper room or in the basement. With this device the drafts may be turned completely off, and at 5 or 6 a.m., or any other predetermined hour for which the clock has been set, the regulator is released and the draft is automatically turned on. The clock is an alarm clock of the standard pattern and can be used as an alarm in conjunction with operating the heater drafts if so desired. A pivoted dog in conjunction with a ratchet constitutes the entire mechanism of the regulator. The dog is tripped by the clock at the hour for which it is set, and a weight then pulls the regulator into proper position to close the check and open the draft.

This regulator can be used during the day to control the drafts of the furnace or boiler independently of the operation of the clock. The regulator is such a simple device that it can hardly get out of order. Anybody

The Wireton Automatic Time Draft Regulator.

can adjust and operate it. It appears to be a very effective arrangement for saving money by avoiding the useless burning of coal, and at the same time supplying a convenient arrangement for making the house comfortable in the morning, without the necessity of somebody rising early for that special purpose. The manufacturers of this regulator are the Wireton Heating Company, Blue Island, Ill., whose Chicago office is located at 40 Dearborn street.

Imico Heaters.

The Illinois Malleable Iron Company, 30-32 West Monroe street, Chicago, are issuing a new catalogue to bring to the notice of heating contractors their Imico steam and hot water heaters. These heaters are of the vertical sectional type, the larger sizes being made with the sections in two parts for ease in handling. The location of the crown sheet increases the heating surface and the return flues cause the gases to give up their principal heat before escaping. The waterways facilitate heating and a steady water line. Screw nipples are used and a feature is made of the correct alignment of all the parts. The boilers are made to carry from 475 to 4000 feet of steam radiation. The catalogue also shows their Ætna heaters, pipe hangers, floor plates adjustable floor sleeves and the Eureka combiuation circulation fitting for hot water. This fitting has become very popular with the trade, as it saves labor and cost and aids circulation.

THE Board of Health of Erie, Pa., has ordered the revised plumbing regulatious of that city to be printed.

New York City Notes.

Trade still continues brisk in all branches and nearly every shop is getting its share. The main difficulty is in collections, which are unusually slow.

* * *

John H. Graham of East Thirtecnth street is about again, having fully recovered from a severe operation he recently underwent.

* * *

The wife of John Muir of James Muir Sons & Co. died last Monday from a malignant carbuncle.

* * *

It is too bad that the "Shoot the Chutes" was not at College Point the day of the Brooklyn Branch outing instead of at North Beach, as several who attended might have stayed much later.

* * *

L. H. Wenzel of 705 Columbus avenue is doing the plumbing in a large private house on Seventy-seventh street, opposite Manhattan Square, for the Louis Webber Building Compauy.

* * *

Chas. Hensle, iu addition to his other large jobs, has the plumbing contract for the extension to the Hebrew Orphan Asylum, on Amsterdam Avenue Hill.

* * *

B. P. Eldridge of 145 East Seventeenth street was the successful bidder for the plumbing contract for the Earle Building of Columbia University.

* * *

Alex. Bryant has some large contracts on hand, including the addition to the Grand Union Hotel; a mansion at Alexandria Bay for Geo. C. Boldt, proprietor of the Waldorf-Astoria, and the Martinique Building, to be erected on the block at Broadway, Thirty-third and Thirty-fourth streets.

Heating and Plumbing Notes.

A PLUMBER who brought suit against the master plumbers of Norfolk, Va., on the charge of maintaining a trust and applying a boycott to the damage of his business failed to prove his case and a verdict was rendered in favor of his opponents.

THE FOWLER & WOLF MFG. COMPANY, Radiator manufacturers, Philadelphia, Pa., now have their own foundry plant and factory, which is located at Norristown, Pa., running on full time, and announce that their facilities for manufacturing Radiators, &c., have been greatly increased and improved.

THE steam fitter will be held in kindly remembrance by his customers who uses the Atlas Radiator Pedestals under all the Radiators he places in residences. They are made by the Atlas Radiator Pedestal Company, New London, Conn., for all widths of Radiators. Where they are used the carpets on the floors can be readily laid or taken up by the women of the house. They are so made that when the top of the Radiator is pushed back till all the weight is on the back legs the Pedestal will spring open and allow the edge of the carpet to be pushed back to the baseboard, or taken out, as desired.

W. E. PAUL, 39 to 45 Market street, Portsmouth, N. H., who makes a specialty of sanitary engineering and steam and hot water heating in addition to his local business, does a great deal of work in the fine residences along the coast of Maine. He has sent *The Metal Worker* a folder inclosing some fine views of a section newly opened to builders, called High Pasture, at York Cliffs.

THE secretary of the Board of Health of Attleboro, Mass., has sworn out warrants for the arrest of plumbers doing work in that city without a license.

WILLIAM WARD, Poughkeepsie, N. Y., bid $15,000 and secured the contract for piumbing and heating the Vassar Hospital additions. It is uuderstood that the work will not only be of an extensive nature, but of a high order.

A STRIKE among the plumbers in Minneapolis, Minn., has been caused by alleged violations of the old agreement between the masters aud journeymen for the for-

mer to employ none but union men and the latter to work for none but members of the association. Some members have withdrawn from the association and this, it is claimed, has created the trouble.

JOHN C. MCKERNAN, Pottsville, Pa., has secured the contract to install a hot water heating plant in the Market street school building in that town and will use a Monarch Sunshine Boiler made by Orr, Painter & Co. of Reading, Pa.

THE SANITARY ENAMELING COMPANY, Milwaukee, Wis., are sending out special sheet No. 1, announcing that they are introducing a new line of Enameled Sanitary Goods. The circular shows half-tone engravings of some fine Lavatories and Sinks and states that Bathtubs, Pantry Sinks and Hoppers will follow. The company report that while their line is new and will have some new attractions the enameling business is fully understood by them, as it is not a new feature to them. Henry Stein is the manager of their New York branch, at 48 Cliff street.

THE BIGELOW COMPANY of New Haven, Conn., have taken a contract to furnish four Steam Boilers in connection with the steam heating plant to be installed by the Connecticut Hospital for the Insane. The bid was about $6000.

JAMES DONOVAN, Middletown, Conn., has been awarded the contract to do the plumbing at the new building to be added to the Hospital for the Insane in that city.

A NEW method of heating cars has been adopted in Christiania and Stockholm, according to the *Railway Herald* of London. The apparatus consists of long, perforated boxes, one under each length of seats. The boxes are filled with red hot briquettes of compressed coal, prepared so that no smoke or smell results from their consumption. Iron sheeting is arranged under the seats which allows the fumes to escape into the open air. On fresh air passing through a ventilator placed under the coal box at the bottom of the car the hot combustible gases pass through this iron sheeting throughout its entire length, diffusing a steady heat into the car through a set of perforated iron plates placed between the legs of the seats. The speed of the car develops sufficient draft to completely consume the briquettes. It is asserted the system has been found entirely satisfactory, even on the score of economy.

A LETTER from James C. Gormly informs us that after two years' soldiering in the Philippines he has returned to Macon, Ga., and opened a plumbing and tinsmithing shop at 320 Third street. He succeeds his stepfather, Robert Falkner, who died during his absence. Mr. Falkner was an old time Scotch tinner. He established the business before the Civil War and built up an enviable reputation for good work. Mr. Gormly learned the trade under him and is well acquainted with the old customers, all of whom he hopes to retain. He desires to receive catalogues and quotations from manufacturers and dealers in goods in his line.

THE business of George P. Clarke, manufacturer of Clarke Exhaust Fans, at Windsor Locks, Conn., has been incorporated under the name of the George P. Clarke Company, and will be conducted along the same lines and under practically the same management as heretofore. The officers are George P. Clarke, president, and George E. Clarke, secretary, treasurer and general manager.

W. H. SCHLABACH, secretary of the School Board of De Witt, Clinton County, Iowa, will receive bids until August 30 for a hot water heating system for a school house in the Independent District.

THE STOVER MFG. COMPANY, Freeport, Ill., are erecting a new plant, into which they hope to move by October 1. The company have purchased a tract of land, 21½ acres in extent, of which 6½ acres will be covered with shops. There will be four buildings, as follows: The warehouse and shipping department, 320 x 77 feet; the wood shop, paint, packing, blacksmith and galvanizing departments in a building 554 x 77 feet; the power house, machine shop, assembling rooms, stock rooms and experimental department in a building 468 x 77 feet, and the pattern shop, core room, foundry, rattling room and stock room for castings in a building 418 x 77 feet. The buildings will be built of stone with asbestos roof, and will be equipped with an automatic sprinkler system.

THE GLAMORGAN PIPE & FOUNDRY COMPANY, Lynchburg, Va., manufacturers of Cast Iron Gas and Water Pipe, Special Castings, &c., have leased the large Pipe works of the Radford Pipe & Foundry Company, at Radford, Va., which have a capacity of from 125 to 150 tons per day. The company advise us that the latter works are in active operation, with orders ahead for all the Cast Iron Pipe they can furnish for some weeks, and that they are making preparations to start up the special foundry and will soon be in shape to turn out heavy loam castings of almost any description.

LEWIS A. COLEMAN has been appointed assignee of the Monarch Mfg. Company, Indianapolis, Ind. The company were organized in 1897 with a capital stock of $75,000 and have for a long time conducted a successful business in the manufacture of Acetylene Gas Generators, Wire Fencing, Wire and Brass Novelties. It is expected that the company will be reorganized. In the meantime manufacturing operations will be continued under the direction of the assignee.

THE AMERICAN RADIATOR COMPANY have declared the regular quarterly dividend of 1¾ per cent. on their preferred stock, payable August 15.

JAMES & GATES, 156 Fifth avenue, New York, are now displaying samples of the Our Own line of Steam and Hot Water Heaters printed attractively to aid in following the fire travel over the surface presented.

HOBEN & DOYLE, Philadelphia, Pa., have been awarded a contract for plumbing the Mississippi State Capitol buildings, Jackson, Miss.

BIDS will be received at the office of the commissioners of the District of Columbia at Washington, D. C., until September 21 for a steam power plant and connections at the Trumbull street pumping station.

CHARLES O'NEILL, Peoria, Ill., bid $1279 and was awarded the contract for plumbing the Greeley School building in that city.

THE SIMS COMPANY, Erie, Pa., are sending to the trade an eight-page booklet showing the Sims Exhaust Heads, Flue Scrapers, Flue Blowers and Oil Filters. The Exhaust Heads are made for pipes from 2 to 20 inches in diameter and are said to be excellent condensers and water savers.

New Firms and Changes.

THE G. F. BARD COMPANY have been incorporated at Norwich, Conn., with a capital of $10,000, by George F. Bard, G. Percival Bard and Charles Tyler Bard, to deal in Iron, Steel, Copper and other metals, and Mill and Plumbers' Supplies.

THE BOSTON SANITARY MFG. COMPANY have been incorporated, with principal office in the Corporation Trust Company Building, 15 Exchange place, Jersey City, N. J., to manufacture Sanitary Articles, &c. The concern have an authorized capital of $260,000. The incorporators are Robert M. Wilson, Chas. M. Hosmer and L. G. Moore.

THE COLUMBIA HEATER COMPANY of Paterson, N. J., have been incorporated to manufacture Radiators, with a capital of $25,000, by Herman E. Frommelt, Lucy B. Frommelt, Henry Henning and William H. Henning.

A. J. SMALL has opened a plumbing shop at Waynesboro, Pa.

J. P. BRICKLEY has bought the steam heating business of C. E. Lewis, a hardware merchant, and added it to his plumbing business in a new store at 407 Commercial street, Emporia, Kan.

TRUE C. FIFE has bought out the interests of his partners in the heating and plumbing firm of Fife Bros., Carter & Co., at Reading, Mass., and has become sole proprietor. The retiring partners are James C. Carter and Will McG. Fife. Mr. Carter will remain in the employ of Mr. Fife. The new proprietor has already closed contracts for remodeling the heating system at the Melrose Post Office, for the plumbing of the new residence of Harry L. Dane and for the plumbing and installing of a water heater in the house of Mrs. Robert Powers.

The Amalgamated Strike,

Since our last report some very important developments have occurred in connection with the Amalgamated Association strike. In the latter part of last week it seemed that the strike would be settled, as the entire Executive Committee of the Amalgamated Association went to New York Friday night, August 2, and were in conference on Saturday with J. P. Morgan, and E. H. Gary, chairman, and Charles M. Schwab, president, of the United States Steel Corporation. It was the purpose of securing a modification of the J. P. Morgan proposition that took the Executive Committee of the Amalgamated Association to New York City, but their trip was fruitless. The conference lasted several hours, and at its close the Amalgamated Association and the United States Steel Corporation were wider apart than at any time since the strike started. The cause of the conference and what took place at it is perhaps best described in an official announcement which was given out by the Amalgamated Association shortly after the conference ended. It is as follows:

We, the members of the Executive Board of the Amalgamated Association of Iron, Steel and Tin Workers, deeming it incumbent upon us to enlighten the public through the press with reference to the present relations between our association and the United States Steel Corporation, present the following statement: The officials of the United States Steel Corporation, instead of resuming negotiations where they were suspended at the conference held July 11, 12 and 13, have withdrawn the propositions made at that time and are now offering much less than they agreed to sign for then.

The following is the proposition which the United States Steel Corporation gave us to-day as their ultimatum. It will be observed that the preamble states that the United States Steel Corporation officials will "advise" settlement by the underlying companies:

Preamble: Conditions under which we are willing to advise settlement of labor difficulty. Proposition. Tin Plate Company—Business shall proceed under contract signed with the Amalgamated Association as of July 1, 1901.

American Steel Hoop Company.—Company should sign the scale for all the mills owned by the American Steel Hoop Company that were signed for last year.

American Sheet Steel Company.—Company should sign the scale for all the mills of this company that were signed for last year, excepting the Old Meadow and Saltsburg mills.

We desire to preface our proposition by directing attention to the fact that it is a modification of that which we offered originally. At the last conference, as at those preceding it, we required signature of the scales for all the mills owned and operated by the United States Steel Corporation, while in the proposition given below we asked that the scale be signed for none but those mills which are organized and where the men ceasing to work have signified their desire to be connected with the Amalgamated Association. This modification has been made because the trust officials declared that we wished to force men into the organization against their will and desire. We therefore asked that the scale be signed for only those men who desire it.

Proposition of the Amalgamated Association: We, the members of the Executive Board of the Amalgamated Association, hereby present the following proposition as a reply to that received from the United States Steel Corporation:

Sheet Mills.—All mills signed for last year, with the exception of Saltsburg and Scottdale, and with the addition of McKeesport and Wellsville.

Hoop Mills.—All mills now known to be organized—viz.: Youngstown, Girard, Greenville, Pomeroy, Warren, Painter, Lindsay & McCutcheon, Clark, Monessen, Mingo and bar mill, 12-inch, 9-inch and hoop mills of the Cleveland Rolling Mill Company.

Tin Mills.—All mills except Monessen.

Note.—All matters of detail to be left for settlement by conference.

We, furthermore, wish to state that our purpose in coming to New York was not because we doubted our president, T. J. Shaffer, and secretary, John Williams, who have our confidence and indorsement, but in the hope of obtaining settlement of the strike.

GENERAL STRIKE ORDERED.

As the result of the failure of the conference President Shaffer on Saturday night issued the following order calling out all the Amalgamated men employed in any of the mills of the United States Steel Corporation:

Brethren.—The officials of the United States Steel Trust have refused to recognize as union men those who are now striving for the right to organize. The Executive Board has authorized me to issue a call upon all Amalgamated and other union men in name and heart to join in the movement to fight for labor's rights. We must fight or give up forever our personal liberties. You will be told that you have signed contracts, but you never agreed to surrender those contracts to the United States Steel Corporation. Their officers think you were sold to them, just as the mills, with contracts and all. Remember, before you agreed to any contract you took an obligation to the Amalgamated Association. It now calls you to help in this hour of need. Unless the trouble is settled on or before Saturday, August 10, 1901, the mills will close when the last turn is made on that day. Brethren, this is the call to preserve our organization. We trust you and need you. Come and help us, and may right come to a just cause.

The strike order will affect the National Steel Company's works at New Castle and Mingo Junction, the Frankstown, Republic and Riverside works of the National Tube Company, and most of the mills of the Federal Steel Company at Milwaukee, Joliet and South Chicago. It is not at all certain, however, that the union men in all these plants will go out. The extent to which the strike will spread can only be determined when the time comes for the order to go into effect. But it is unlikely that the United States Steel Corporation will be crippled to the extent hoped for by the association. A good deal of wild talk is being indulged in about the number of men called out by the strike. Thus, we have been told that 25,000 and even 50,000 men of the American Sheet Steel Company are out of work. The fact is that all the plants employ about 9000 men.

THE SHEET MILLS.

Meanwhile the Amalgamated Association has met with two defeats which may go a great way to break the strike. The strikers have met signal defeat at Wellsville, Ohio, and Hyde Park, Pa., where the American Sheet Steel Company's plants have been started up on a nonunion basis. All the mills of the Kiskiminetas Valley, which are under the management of E. W. Pargny, are nonunion. These embrace the works at Vandergrift, Apollo, Old Meadow, Scottdale, Saltsburg, Leechburg and Hyde Park, and in these works more than 50 per cent. of the output of the American Sheet Steel Company is made. While nothing official has been given out, it is probable that the Wood works at McKeesport, which have been closed since July 1, will be started in a short time. It is not anticipated that there will be much difficulty in getting sufficient men to operate these works, which are the second largest owned by the American Sheet Steel Company.

THE TIN PLATE MILLS.

The strike affects the American Tin Plate Company more seriously than any of the constituent concerns of the United States Steel Corporation. All the tin mills of the concern have been closed since the night of July 13, with the single exception of the Monessen works—that is, in the rolling and heating departments, but the tin house employees worked up the black plate that was on hand when the strike was declared This, however, has about been exhausted and very little work is being done in any of the tin mills of the American Tin Plate Company. The situation, however, will probably be relieved in a short time by the fact that the American Tin Plate Company are importing 6000 tons of black plate from Swansea, Wales. This black plate is expected to reach New York this week and will be distributed among the various plants of the American Tin Plate Company, and will be followed by further importations of larger amounts. It is believed that the tin house men, who belong to the National Protective Association of Tin Plate Workers and whose scale has been signed, will not break their contracts with the American Tin Plate Company, but, on the other hand, it is likely these men will work up this black plate, and if so it will help out the American Tin Plate Company on their contracts to a very great extent. If the tin house men refuse to work this black plate they will break their agreement, and if this is done the United States Steel Corporation will likely refuse to have any dealings whatever with this organization in the future. It is possible the American Tin Plate Company may import tin and terne plate from the other side, but this has not been fully determined upon. If such a course were pursued it would mean a loss to the American Tin Plate Company on every box, as the price obtained under their contracts would be less than the cost of laying down for-

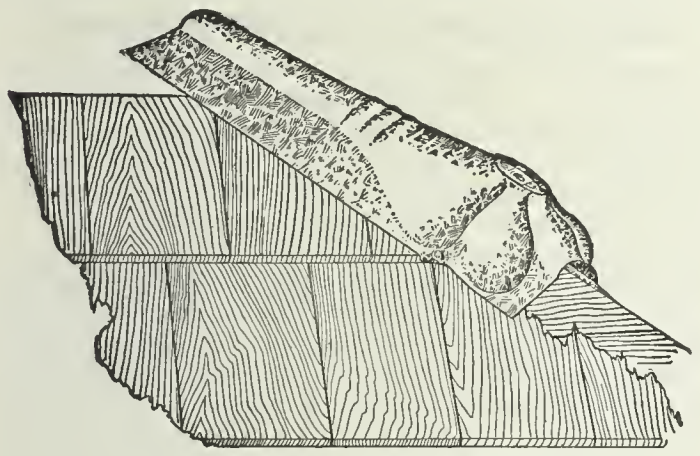
eign plate at tidewater points. The next few days will bring out some very important developments in the strike and make the situation, as regards the strength of the Amalgamated Association, much clearer than it is now.

LABOR LEADERS CONFER.

A significant development in connection with the strike is the conferences that have been held in Washington and Pittsburgh between President Shaffer and officials of the Amalgamated Association and President Gompers and Secretary Morrison of the American Federation of Labor. The purpose of the conferences was to discuss the extent to which the Federation of Labor might participate in the strike should the Amalgamated Association call for assistance. The conclusion reached appears to have been to the effect that it would be unwise for the Federation to take any active part in the strike, and that if the Amalgamated Association should appeal for aid the policy of the Federation in response should be determined by a meeting of the full Executive Council. At the time of writing the head officials of the two organizations were in conference in Pittsburgh, where Messrs. Gompers and Morrison have gone to study the situation at short range. Meanwhile both sides are awaiting the outcome of the general strike order when it becomes effective on Saturday night. The claims put forth on either side as to the results that will be developed from it are widely at variance.

Adjustable Stamped Metal Hip Shingle.

The Galesburg Cornice Works, Galesburg, Ill., have just placed on the market the Adjustable Stamped Metal Hip Shingle, which is herewith illustrated. These



Adjustable Stamped Metal Hip Shingle.

shingles are stamped from tin, galvanized iron or copper, and are designed for use on hips of shingles or slate roofs, and are adjustable to varying courses of shingles. They are an effectual protection against leaks and curling shingles and make a very ornamental hip finish. These hip shingles are made in two sizes, 4 x 9 inches, for use with wood shingles, and 5 x 12 inches for slate roofing. Both sizes are adjustable to different widths of shingles or slate shown to the weather.

Pancoast Ventilators.

An interesting catalogue is being distributed by the Pancoast International Ventilator Company, 223-225 South Fifth street, Philadelphia, Pa., devoted to the Pancoast ventilators. Following the introduction there is given the record of a test showing that the Pancoast ventilator begins to exhaust in a wind blowing but 3.2 miles per hour, and increases rapidly in capacity as the wind gains in velocity. The company's guarantee is conspicuously presented. An attractive feature of the catalogue is the number of fine half tone engravings showing trucks loaded with ventilators for shipment to West Australia and large buildings where these appliances are in use, such as railroad wharves, iron works, office buildings, cotton mills, sanitariums and hotels. The ventilators are made round, oval and square, suited for use on skylights, lantern roofs, chimney tops and ventilating flues. The text and sectional engravings make the construction and operation of the Pancoast ventilators readily understood, and a number of testimonial letters, together with a long list of customers, give evidence of their popularity.

FLASHINGS.

WORK was resumed last week at the rolling mills of the National Enameling & Stamping Company, at Granite City, Ill., after the usual summer shut down for repairs.

THE TOWNLEY METAL COMPANY, Kansas City, Mo., have completed a new warehouse, more than doubling their capacity. The new building is of mill construction, well equipped to store and handle goods economically and expeditiously. In addition to their line of Tinners' and Roofers' Supplies, they will put in a stock of General Hardware. Geo. E. Garland will look after the Hardware end of the business. For the past eight years Mr. Garland has been with the Turner Hardware Company, of Muscogee, I. T., as salesman and buyer. Previous to that he was connected with the McGregor & Noe Company, Springfield, Mo. He worked his way up from the tinner's bench to his present position. The Townley Metal Company are to be congratulated on having secured his services.

HERMAN GEHNRICH, 69 Rutgers Slip, New York, informs us that he has admitted his son to partnership under the firm name of Herman Gehnrich & Son. They have opened a branch at 208 East Fifty-seventh street, where they are prepared to do all kinds of Tin, Copper and Sheet Iron work. The firm make a specialty of Exhaust and Blow Pipe work, Skylights and Cornices, and also make Enameling Ovens, do Roofing, put up Leaders and Smoke Stacks, Chimney Caps and Ventilators. They desire to receive catalogues and price quotations of goods in their line.

H. WEISS & Co., 20 Cliff street, New York, in addition to handling all kinds of Sheet Metal Working Machinery, are carrying in stock a large assortment of Skylight Gearing in all sizes. They invite Skylight makers to examine this stock and to get their prices. The firm are also prepared to furnish the Union Grinders, which are well adapted to the shops of Sheet Metal workers and Stove dealers, as they are run by foot power, and tools can be readily sharpened and Stove and other castings ground to fit much quicker than by filing.

AMONG recent contracts for Metal Ceiling work by the Penn Metal Ceiling & Roofing Company, Limited, 14 Harcourt street, Boston, Mass., are ceilings for Woolworth's 5 and 10 cent store in Boston, 7500 feet for the Lane Building, Keene, N. H.; 17,500 feet for a parochial school in Haverhill, Mass.; Ceilings for four Government buildings at Fort Greble; 10,000 feet for the Folsom Building, Lynn, Mass.; 13,000 feet for the Shepard Building, Providence, and smaller jobs in Lawrence and North Adams, school houses in Athol and Shelburne Falls, Congregational churches at Hampstead, N. H., Littleton, N. H., and Thompson, Conn., and the M. E. Church, Milan, N. H.

THE IOWA CAN COMPANY of Des Moines, Iowa, recently organized with a capital of $50,000, have taken over the business of Thompson & Keisey, and have also purchased the Can and Tin working machinery of the Manning Signal Lamp Company. It is reported that the new concern will erect one of the largest Tin Can and Box factories in the West.

CONTRACTS have been let for rebuilding the burned Tinware and Sheet Metal factory of Hemp & Co., 904 South Second street, St. Louis, Mo.

THE HEEKIN CAN COMPANY of Cincinnati, Ohio, have been incorporated with a capital stock of $100,000.

THE PROTECTIVE VENTILATOR COMPANY, 129 Fulton street, New York, are sending out a letter calling attention to the advisability of equipping buildings with ventilating apparatus during the summer months so that they will be ready for use when the weather makes them desirable. The company also distribute a

card giving directions for using their Protective Ventilators, which are designed to be attached at the bottom of a window so as to insure an inflow of fresh air in such a manner that it is distributed without having the effect of a draft.

THE mill building of the Curtis Sheet Steel & Corrugating Company of Zanesville, Ohio, a steel structure 300 x 100 feet, is rapidly nearing completion. The Pawling & Harnischfeger 20-ton crane is completed and in position. Their electric plant is almost ready to start and the crane will be tested in a day or two. All of the materials for their engines, mills and furnaces are on the ground and only awaiting the starting of the crane to be placed in position. The building for their corrugating department is nearly completed. The battery of eight tubular boilers are set and only await steam connections to be ready for operations. A large number of cars of raw material have already been received and the company expect to be rolling sheets by September 1.

THE promoters of the Chicago Tinplate & Can Company are considering the comparative advantages of a number of locations which have been offered to them in the vicinity of Chicago. The plant will be a large one and the company will require about 40 acres of land. They expect to effect an organization some time this month and to settle upon a site, after which their plans will probably be announced.

Gas and Oil Fields of the West and Southwest.

A bulletin issued by the United States Geological Survey contains information of interest regarding the oil and gas fields of the West and of Texas. The report says the productive territory is being constantly extended, as there is a demand for gas as fuel and as oil is proving a profitable resource. The principal productive field of the Western interior area is in southwestern Kansas and the northern part of Indian Territory, although both gas and oil in limited quantities have been found as far north as Kansas City and along the western border of Missouri. The report says the coal measure rocks of Iowa thus far have not proved productive. The small flows of gas there are sporadic and the exploitation of that field has been attended with considerable uncertainty and risk.

According to the report the Beaumont oil has a gravity of 22 degrees Baume, has an asphalt base and contains a considerable quantity of sulphur. "Tests show," says the report, "that the percentage of light oils which it contains is very low and it is therefore regarded as a fuel oil. The cluster of wells at Beaumont which have reached the oil deposits are 4 miles south of the center of the town and within a radius of ½ mile from the first discovery. Up to June 15 those actually recognized as producers numbered 11."

Regarding present prospecting in the Texas field the report continues: "The active drilling has been nearly all confined to the Spindle Top Heights and thus far has developed a field of limited extent. Some of the wells situated very near to the producing territory are now proved to be failures. This has caused a more conservative spirit among the operators and the oil business is beginning to be conducted on a more careful basis. The fact that the reservoir under Spindle Top Heights appears to have only a limited extent does not preclude the possibility of finding oil in the same general horizon in other places. Instead of a continuous field prospectors should expect to find a number of small fields occurring at wide intervals."

LOMBARD & Co., 236-238 A street, Boston, Mass., have just issued a fine illustrated catalogue of their Grindstone product, including Stones to run by power and hand, Grindstones for use on shipboard, Grindstone Fixtures, both hand and power; Holystones, Curriers' Rub Stones, Glass Cutting Stones and Wheels, Curve and Beveling Stones, &c. This business was established in 1827, and the concern operate their own quarries in Nova Scotia and New Brunswick, besides being large importers of English Stones. They have for some time been making a specialty of Grindstones for glass cutting, used by glass bevelers and opticians.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

LINING A LEAD TANK.

From W. R. N., New Haven, Conn.—I have a tank to line with lead and I am going to wipe the corners with solder. The tank is to hold salt water. I desire to know if the action of the salt water will eat the solder away, and if it does, what can be done to prevent it.

Answer.—The surfaces of the lead in the corners should be thoroughly tinned and the seam wiped carefully with good solder, when it is probable that there will be nothing in the action of the salt water to interfere with the durability of the seam thus made. If the seams in the corners of the tank were made by the lead burning process there would be absolutely nothing that could cause the tank to leak except the eating away of the lead itself. If the tank is small so that it can be placed in convenient position for the work the lead burning can easily be done with illuminating gas, by securing a compound blow pipe. The work can be more readily done if Yager's salts is used to prevent the lead from oxidizing in the front of such a flame. If it is done with a regular lead burning machine, using oxyhydrogen gas, no soldering fluid would be necessary. The use to which the tank is to be put would determine whether it would be advisable to go to this extra trouble, but for all ordinary purposes it is probable that the wiped seam will prove satisfactory.

CALCULATION OF SLATE ROOFING.

From W. E., Orange, N. J.—Referring to the formula given to "A. A. B." in *The Metal Worker* March 30 on the calculation of slate roofing I cannot see why, after deducting the lap from the length of the slate, the remainder is divided by two. The result seems to me to expose only one-half of the area of each slate.

Answer.—In the formula it was not explained that the lap was to be made on the second course below the top or last course laid and the intermediate course was to be laid so as to divide the surface exposed evenly between it and the slate below it. At the point where the lap is taken into consideration there are three thicknesses of slate. The surface exposed to the weather, instead of being the length of the slate less the lap, is just one-half; hence the division by two.

SHEET METAL BOATS.

From J. S., Woodbury, Conn.—I have an idea that I can make a boat, using iron pipe for the frame work and galvanized sheet iron for the covering. I want to make it so that I can put in a naphtha engine to propel it. It will be used on a river and should be of light draft, and the bottom should be flat rather than round; yet it must carry about ten persons. Is such a boat feasible, and can *The Metal Worker* furnish drafts of plans?

Note.—The question of making sheet metal boats is one that frequently comes up, and *The Metal Worker* will be glad if any who have made such boats will use its columns for presenting such drawings and descriptions of the process of manufacture as will be of assistance to its boatbuilding readers. In the meantime we would say that in *The Metal Worker* of May 25, 1901, an article on sheet metal boat construction was presented, and it is probable that our correspondent could modify the instructions therein given to meet the requirements of his case. An article on the manufacture of sheet metal canoes was presented in our issue of July 22, 1899, and in *The Metal Worker* of November 10, 1894, a picture was given of a sheet metal launch, propelled by a two horse-power gasoline vapor engine, that was said to run easily seven miles an hour. From this our correspondent

can judge that his proposition is feasible, and by consulting the files of *The Metal Worker* he can secure such assistance as the articles mentioned furnish.

THE AREA OF A TRAPEZIUM OR IRREGULAR SHAPED ROOF.

From Apprentice, Passaic, N. J.—Will you kindly inform me through the columns of *The Metal Worker* the shortest way to find the number of square feet in a trapezium, representing an irregular shaped roof, as for instance, in those of the inclosed sketches?

Answer.—Our correspondent's sketches are shown in Fig. 1 of the annexed diagrams. A trapezium is a rectilinear figure of which no two sides are parallel. There is no rule for finding its area except to divide it into two triangles by drawing either diagonal. To find the area of a triangle it is necessary to know the length of one of its sides, assumed as the base, and also its altitude, or the distance from the base to the opposite angle, measured on a line at right angles to the base. The rule for finding the area of a triangle is: Multiply the base by the altitude and take one-half the product. To obtain its area when the length of the three sides only are given, it is best to first construct the triangle to as large a scale as possible, then drop a perpendicular from one of its angles to the opposite side and measure the length of the same by the scale, after which the above rule may be applied. An inspection of the diagrams given in Fig. 1 will show that they are not drawn to scale. It is impossible to construct a four-sided figure when the lengths of the sides only are given. At least one angle must be known. In the larger of the two diagrams, neither angle as drawn is a right angle, consequently unless one of the diagonals is known the figure cannot be constructed or measured.

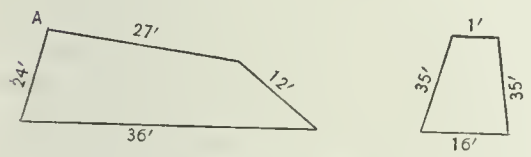


Fig. 1.—Reproduction of Correspondent's Sketches.

If it be assumed that the angle at A is a right angle the figure may be constructed as shown in Fig. 2. Draw A B and A C at right angles to each other, making them respectively 24 and 27 feet, to any convenient scale. From B as a center, with a radius equal to 36 feet, strike an arc which intersect with another arc drawn from C as center with a radius equal to 12 feet, and draw B D and C D to the point of intersection. Now draw the diagonal B C. Since the angle at A is a right angle, the area of the triangle A B C may then be computed by the rule as follows: $24 \times 27 = 648$; $648 \div 2 = 324$ square feet. Before the area of the other triangle B C D can be computed a line perpendicular to one of the known sides, as B D, must be drawn from the opposite angle, C. Therefore from C draw the line C E at right angles to B D, and measure its length by the scale. Supposing its length is ascertained to be 11.9 feet, the area may be found as before: $\frac{36 \times 11.9}{2} = 214.2$ square feet. The area of the trapezium is, therefore, the sum of the areas of the two triangles, 214.2 and 324, which is 538.2 square feet.

In the practical work of measuring a roof to obtain its area care should be taken to measure the necessary altitudes (distances measured at right angles to a base line), or such diagonals as will furnish the means of constructing their figures on paper.

In the smaller of the two diagrams in Fig. 1, as the two sides are the same, it may be assumed that the 16-foot side and the 1-foot side are parallel, the two 35-foot sides making equal angles with either. This being the case the figure becomes a trapezoid. To find the area of a trapezoid, multiply half the sum of the parallel sides by the altitude. Half the sum of the parallel sides is $\left(\frac{16+1}{2}\right) = 8\frac{1}{2}$ feet. In this, as in the former problem, the altitude is not given. The figure can either be constructed to scale, as shown in Fig. 2, and the altitude measured, or the altitude may be obtained by the use of square root from the figures given. To construct the figure to scale first draw the base line 16 feet long, then locate the point C, whose distance from A is equal to the difference between the parallel sides (16 — 1), which is 15 feet. From A and C as centers, with a radius of 35 feet, strike two arcs intersecting each other at D. From D draw D E parallel to A B, and from B draw

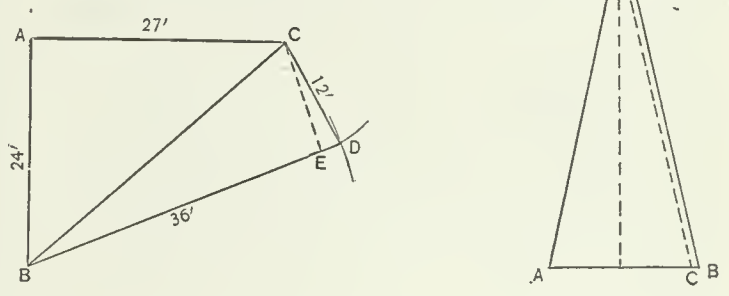


Fig. 2.—Shapes Shown in Previous Figure Drawn to a Scale of 24 Feet to the Inch.

THE AREA OF A TRAPEZIUM OR IRREGULAR SHAPED ROOF.

B E parallel to C D, completing the figure. A perpendicular from D or E to the base, as D F, will give the required altitude, which may be measured, and its length multiplied by 8½ feet, above obtained, to obtain the area.

The length of the perpendicular let fall from D to the base line may be obtained in figures by the application of the old rule—viz.: The square of the hypotenuse of a right angled triangle is equal to the sum of the squares of the other two sides. Since A D and C D are equal, the perpendicular let fall from D will divide A C into two equal parts. The base A F of the right angled triangle A D F is therefore equal to 7½ feet, the square of which is 56¼. The square of A D, the hypotenuse (35×35), is 1225, and since this is the sum of the squares of the other two sides, the square of the perpendicular must be $1225 - 56\frac{1}{4}$, which is $1168\frac{3}{4}$. By extracting the square root of this figure the altitude is ascertained to be 34.18+ feet. The area of the trapezoid A D E B is therefore 8½ feet $\times$ 34.18+ feet, which is 290.53+ feet. Should the angles at A and B be unequal the figure would then become a trapezium, and its area could only be constructed by knowing one of the angles, or what amounts to the same thing, knowing the length of one of the diagonals.

HOW SHOULD RADIATORS BE CONNECTED?

From I. R., Norwich, N. Y.—I would like to get the views of the readers of *The Metal Worker* as to what is the best way of connecting a first-floor radiator and a second-floor radiator with the end of the main of a hot water heating system so that the circulation through one radiator will not interfere with the circulation through the other. What would be the effect of using a twin ell on the end of the main under such circumstances?

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is dull and rather weak.

Copper continues quiet and without change.

Pig Lead is dull and unchanged.

Spelter is weak and dull.

Antimony is without change.

Nickel remains firm and in good demand.

Aluminum is in active demand at former prices.

Tin Plates are getting scarce and about $1 a box higher.

Black Sheets are very active and strong in price, with scarcity developing.

Galvanized Sheets have been marked up about 10 per cent.

Old Metals are dull and weak.

Sheet Copper is in fair demand and firm in price.

Pig Iron is quiet and without change in price.

Hardware is moving in good volume, with prices stiffening in some lines, owing to the strike.

Plumbers' Supplies are in good demand and prices show upward tendency.

Wrought Iron Pipe is firm and scarce; New York jobbers advanced price on Merchant Pipe 5 per cent.

Steel Clad Bathtubs have undergone a further advance of 5 per cent.

Plumbers' Brass Work is very firm, with continued good demand.

Poultry Netting Staples are higher.

Stove Pipe and Elbows have stiffened, owing to scarcity of material and large demand.

Tinware is much stiffer and was advanced 10 per cent. this week.

Enameled Ware is about 10 per cent. higher.

Galvanized and Japanned Ware also tends to higher prices.

Wire Nails are in good demand and unchanged.

Cut Nails continue in fair demand, with prices unchanged.

Wire is strong and active.

Linseed Oil is high and unchanged, but lower prices are looked for.

Spirits Turpentine has advanced ½c. a gallon.

METAL MARKET.

NEW YORK, August 9, 1901.

Pig Tin.—Business has been quiet throughout the week under review, with none but comparatively small orders being filled. The cutting off of the largest consumer of Tin by the strike at the mills has caused an increase in stocks here, resulting in weakness in prices. The London market was notably weak and prices here were soft at the close. Jobbers quote Straits Pig in small lots at 28c. to 28¼c. per lb.

Copper.—There was little or nothing doing in this market this week. Business was practically at a standstill and prices were unchanged. The demand here is very light, but has increased in Europe, where prices are the lowest reached by Copper in two years. Small lots of Lake Ingot continue to be quoted at 17¼c. to 17½c. per lb. and Casting Copper at 16¾c. to 17c.

Sheet Copper.—The demand for Sheet Copper continues fairly liberal. Prices are firm and without change on the basis of 21c. per lb. for Sheet Copper from stock.

Pig Lead.—The metal is dull and unchanged, demand being of very ordinary volume and without feature of any kind. Small lots of American Pig are quoted at 4.60c. to 4.62½c. per lb. St. Louis market is quiet and rather weaker.

Spelter.—Dullness continues to mark this metal. The consumptive demand is tame and has been curtailed by the closing down, owing to the strike, of some of the large mills making Galvanized Sheets. Prices, while generally unchanged are inclined to weakness. Good Western brands, in a retail way, are quoted at 4.45c. to 4.50c. per lb. in New York.

Sheet Zinc.—The demand for Sheet Zinc is of about the usual proportions. Jobbers quote 600-lb. cask lots at 6¾c. per lb. and smaller quantities at 7¼c.

Antimony.—A fair demand is noted and prices remain unchanged. Cookson's, in small parcels, is quoted at 10½c. to 11c. per lb. and Hallett's at 8¾c. to 9½c.

Nickel—Is firm and unchanged. Small lots are quoted nominally at 60c. to 65c. per lb.

Aluminum.—A good demand at former prices is reported for this metal. No. 1 Ingot, guaranteed 99 per cent. pure, in small lots, is quoted at 37c. per lb. and 100-lb. lots 35c.

Tin Plates.—The unfavorable developments connected with the steel strike have brought about a nervous condition in the Tin Plate market and sent prices shooting upward with great rapidity. The demand from consumers for prompt deliveries is active and urgent, but comparatively few requirements of this kind can be satisfied, for supplies in jobbers' hands are dwindling down toward the vanishing point. Prices are entirely nominal, holders who have anything to offer being able to obtain almost any figures they choose to ask, within reason. All varieties of Bright and Roofing Plates are scarce, but light weight Coke Tins are particularly so. The latter are being sold at the same price as the heavier gauges. I C, 14 x 20, American Bessemer Coke Plates are selling as high as $7 to $7.25 per box, and even $8 is said to have been paid. Consumers who are anxious to cover their requirements are only too glad to pay these figures where they can have orders promptly filled. The situation has reached the famine stage, and the outlook is far from reassuring. Some importations of Welsh Plates reached New York this week, and others are understood to be on the way, but these will relieve the stringency to but a slight extent.

Sheets.—The demand for both Black and Galvanized Sheets continues in unabated activity and scarcity is becoming more pronounced. Jobbers who have Sheets in stock can get almost any price they ask. There is some talk of foreign Sheets coming into this market, as they can be laid down here and sold at a profit at to-day's prices. The independent Sheet mills are running right along and making a mint of money. The American Sheet Steel Company are steadily increasing their output of Sheets and have Wellsville and Hyde Park running full, nonunion. Prices are very strong and moving upward. New York jobbers are quoting No. 27 One Pass Cold Rolled Soft Steel Sheets at about 4.10c. to 4.15c., and Galvanized Sheets at 60 to 60 and 5 per cent. off the list.

Chicago advices are as follows: The mills in operation are overloaded with business and unable to make definite promises relative to deliveries. Large buyers are turning to jobbers and placing orders for all they can secure. Many inquiries are being received from far Eastern points. Buyers are taking what they can get and are not exacting as to particular sizes or gauges. Jobbers quote No. 27 Black Sheets at prices ranging from 3.80c. to 4c., but from present indications few Sheets will be available at the inside price at the end of this week. Galvanized Sheets are selling at 60 and 10 to 65 and stocks are running low. It is difficult to get standard sizes. Tin Plates are scarcer than ever. The local stocks of Coke Plates are practically exhausted.

Old Metals.—The demand for Old Metals generally is rather light. The Scrap Iron market is affected by the

molders' strike. Prices show no quotable change, however. Dealers are paying about the following for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb.	14¾c.
Light and Tinned Copper	per lb.	13¼c.
Heavy Brass	per lb.	10 c.
Light Brass	per lb.	8 c.
Lead	per lb.	4 c.
Tea Lead	per lb.	3½c.
Zinc	per lb.	2¾c.
No. 1 Pewter	per lb.	18½c.
No. 2 Pewter	per lb.	9 c.
Tin Plate Scrap, per gross ton		$6.00
Wrought Iron Scrap, per gross ton		$10.50 to 11.00
Heavy Cast Scrap, per gross ton		10.00 to 10.25
Stove Plate Scrap, per gross ton		7.00 to 7.50
Burnt Iron, per gross ton		5.00 to 5.50

THE PIG IRON MARKET.

NEW YORK.—Very little has been done in this market, and the situation continues puzzling. Buyers are operating only from hand to mouth. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $14.50 to $15; No. 2 Foundry, $14 to $14.50; No. 1 Soft, $14.50 to $15; No. 2 Soft, $14 to $14.50; No. 3 Foundry, $13.25 to $13.50; No. 4 Foundry, $12.75 to $13.25.

CHICAGO.—Purchasing is being done on a conservative scale. The foundrymen who are most employed and for whose products the sharpest demand exists are simply purchasing enough to insure them from being cramped for supplies. Small purchases of Foundry Pig Iron are being made, but in every case the buyer is urgent for quick delivery. The foundries are all so short of stock that as soon as the molders' strike is settled it is expected that considerable buying will be done. Prices show no change. The local furnaces are still so well supplied with orders that they are not accumulating stock, while Southern makers seem to be doing so much better in other markets that they are exerting no pressure in this district. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon	14.90 to 15.15
Southern Coke, No. 1	14.65 to 14.90
Southern Coke, No. 2	14.15 to 14.40
Southern Coke, No. 3	13.65 to 13.90
Southern Coke, No. 1 Soft	14.65 to 14.90
Southern Coke, No. 2 Soft	14.15 to 14.40

PHILADELPHIA.—The market remains in just about the same condition as noted in our last report. Inquiries are numerous, prices unchanged and sales are very fair, considering the circumstances. The chances appear to favor the expectation of an active demand, providing that satisfactory arrangements could be made with labor, but without that it is hardly likely that any large orders will be placed. Most of the business entered during the week has been for deliveries during August and September, the later months being comparatively neglected. There is quite a scarcity of Iron at local furnaces, and deliveries on all grades are very much behind. For the present, therefore, prices remain firm at last week's figures, as follows, for city and nearby deliveries, and 25c. to 50c. less at points within a radius of 100 miles or so South or West: No. 1 X Foundry, $15.50 to $16; No. 2 X Foundry, $15 to $15.25; No. 2 Plain, $14.25 to $14.75.

PITTSBURGH.—The Bessemer Iron market is neglected and there has been nothing done since our last report. Foundry Iron is dull and prices are weak and lower. We quote: Bessemer Pig, nominally $16; No. 1 Foundry, $14.50 to $14.75; No. 2, $14 to $14.25; No. 3, $13.50 to $13.75, all f.o.b. cars Pittsburgh.

CINCINNATI.—The market for Pig Iron has shown but little life throughout the week. It is generally believed that the impending Steel strike is having a depressing effect; buyers are fighting shy, and in some cases are withdrawing inquiries for fair sized lots. There have been some fair sized sales of Foundry Iron, but what the tonnage has gained in this direction it has more than lost in the decrease in number of smaller transactions. As an offset to this weakening in influence Southern furnaces are understood to have entered into an agreement as to prices to hold good until further notice. This agreement is upon the basis of the following figures, Birmingham: No. 2, $10.50; No. 3, $10. In spite of this the feeling is a little pessimistic, and doubts are being freely expressed as to the duration of the agreement. The situation is an uncertain one, and accurate quotations hard to arrive at. We give the market the benefit of doubt, and quote the agreement figures. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$13.50 to $13.75
Southern Coke, No. 2	13.00 to 13.25
Southern Coke, No. 3	12.50 to 12.75
Southern Coke, No. 4	12.00 to 12.25
Southern Coke, No. 1 Soft	13.50 to 13.75
Southern Coke, No. 2 Soft	13.00 to 13.25
Southern Coke, Gray Forge	12.00 to 12.25
Southern Coke, Mottled	12.00 to 12.25
Ohio Silvery, No. 1	15.50 to 16.00
Ohio Silvery, No. 2	14.50 to 15.00
Lake Superior Coke, No. 1	14.50 to 15.00
Lake Superior Coke, No. 2	14.00 to 14.50
Lake Superior Coke, No. 3	13.50 to 14.00

CHICAGO REPORT.

Scrap Iron and Steel.—Little demand exists for anything except Turnings, which are scarce. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap	$10.50 to $11.00
Machinery Cast	10.00 to ....
Malleable Cast	10.00 to 11.00
Stove Plate (free from burnt)	7.00 to 7.50
Burnt Iron and Grate Bars	5.50 to 6.00
Sheet Iron and Hoops	6.00 to 7.00
Plow Steel	9.00 to 10.00
Breaking Stock	9.00 to 9.50
No. 2, such as Shovels, Hoes, &c	.... to 7.00
Old Boilers—whole (Iron)	.... to 7.00
Old Boilers (Iron) cut in single Sheets and Rings	9.50 to 10.00
Old Gas Pipe and Boiler Tubes	10.00 to 10.50
Cast Borings	4.00 to 4.25
Turnings	8.50 to 9.00
Horseshoes	11.00 to ....

Old Metals.—The only change made is to greater dullness. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	14½c.
Copper Bottoms	13¼c.
Copper Clips	14 c.
Red Brass	13¼c.
Yellow Brass	10 c.
Red Brass Borings	11½c.
Yellow Brass Borings	9 c.
Light Brass	7½c.
Pipe Lead	4 c.
Tea Lead	3½c.
Zinc	2¾c.
Pewter, No. 1	19 c.
Pewter, No. 2	10 c.

Old Rubber.—The movement is exceedingly light. Buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$23.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7¾c.
Rubber Car Springs	....	4¾c.
Inside Bicycle Tubing	....	21 c.
Outside Tubing	....	7¼c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—Trade is quiet, as usual at the opening of the month. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis	5.75	6.00
St. Louis	6.25	6.50
Kansas City, Mo	8.25	8.50

A discount of 10c. from these figures is allowed on all Coal ordered to be shipped in August.

THE NEW YORK ALUMINUM COMPANY of Fishkill-on-Hudson, N. Y., have been incorporated with a capital of $5000. Herman Behlen and Constantine Pilz of Fort Wadsworth, Staten Island, and A. M. Kuhn of Brooklyn are the directors named.

THE HARDWARE TRADE.

The trade is feeling in several directions the effect of the strike among the Steel workers. There is increasing difficulty in getting certain kinds of goods the manufacture of which is interfered with by scarcity of material. The Tin Plate market is much affected in this way and practically all goods in the production of which Sheets are used. Other lines also are suffering in a similar manner, though not to so great an extent. The tone of the market continues strong and prices as a general rule are well maintained, with something of a tendency toward higher values. The volume of business is excellent, and the demand is evidently stimulated by the fear of a possible shortage of goods, owing to the continuance of the strike or to the absorption of goods in consequence of the activity of business. There is naturally some uneasiness in regard to the effect of labor agitations, but the trade are generally taking a hopeful view of affairs, anticipating that the existing disturbance will not be of long continuance. Stocks generally in hands of manufacturers and merchants are fair, but not heavy, the character of the demand being such as to prevent accumulations in warehouses or stores. The retail trade are buying freely, most merchants finding that business conditions justify their keeping stocks up and pushing trade with enterprise.

NOTES ON PRICES.

Wrought Iron Pipe.--The continued scarcity of Pipe is having its effect upon the prices quoted by the jobbers and manufacturers in all sections of the country. At a meeting of the jobbers in Steam Supplies, which was held in New York City on Tuesday, prices for Merchant Pipe, Black and Galvanized, were advanced 5 per cent. on all sizes. This advance, it was said, was due entirely to the scarcity now prevailing, and unless the present indications change in the immediate future there will be another advance within a very short time. The local trade is absolutely without a full line of sizes. The greatest scarcity is noticed in the ¾, 1 and 1¼ inch sizes. The 2-inch Pipe is also commanding a premium for prompt shipments. If the threatened closing down of the National Tube Company's mills is carried out it will mean a cutting off of two-thirds of the present supply of Pipe. This will seriously hamper heating and plumbing operations all over the United States.

Steel Clad Bathtubs.—The local manufacturers of Bathtubs into the manufacture of which sheet steel enters have advanced prices another 5 per cent. this week. The All Steel Enameled Tub is now within 10 per cent. of the cost of the Steel Clad Copper Lined Tub, and the conditions are such at the present time that within a few weeks it probably will be impossible to obtain any of either style Tubs. The fact that the price of Steel Clad Tubs is now very close to that of Enameled Tubs has not curtailed the sale of them to any appreciable extent. This is owing to the fact that it is almost impossible to procure a Cast Iron Enameled Tub. There is no possibility of the cast iron enameling plants catching up with their orders before the first of the year. Instances are cited of jobbers who have orders for Cast Iron Enameled Tubs which were placed in February and March of this year, and which have not, up to the present time, been filled, and there is no prospect of their getting them much before the middle of the coming month. The manufacturers claim that all orders are being taken in rotation, and that the entire country is suffering in a similar manner to that of the local jobbing trade.

Plumbers' Brass Work.—The advance which the manufacturers of Plumbers' Brass Work made on July 29 is being rigidly adhered to by all of the manufacturers and jobbers in the immediate neighborhood. The jobbing trade find no difficulty whatever in getting the advanced prices for whatever Brass Goods they have on hand, and there is considerable of a trade noticed among the jobbers, as they are compelled to buy from each other to a greater extent than at any other time within the past five or six years. As the jobbers notice the scarcity of Brass Work among the local trade they consequently stiffen prices on whatever goods they may have in stock. The outlook is favorable for a continued active demand for Brass Goods, but it is not thought that prices in this line will go any higher in the near future, unless Copper prices should make a radical advance, which is unlikely. Manufacturers generally are not booking orders for delivery within six weeks or two months, having their early capacity fully bespoken.

Tin and Enameled Ware.—The effect of the strike at the mills is becoming apparent in a marked stiffening of the market for Sheet Metal Household Ware. This week the prices of Tinware and Enameled Ware were advanced 10 per cent. at a meeting in New York of the manufacturers who are members of the association covering this line of product. Should the strike be prolonged there will probably be a further advance before long. Stocks of finished goods are comparatively light, and those manufacturers who do not make their own Tin Plates and Sheets are said to be carrying little more material than will last them for a month or so. Consequently a shortage of goods is among the possibilities of the future.

Building Papers.—The market in Building Papers is fairly steady, dealers getting the best prices they can, which is in a measure contingent on the amount of material a buyer can use and how well posted and shrewd he is in buying, a condition that frequently makes a difference in price of from $1 to $5 a ton on Tarred Roofing Felt. This material has recently been offered at $24 per ton for No. 2 Tarred Felt; Two-Ply Roofing, 108 square feet, 40 cents per roll; Three-Ply Roofing, 108 square feet, 60 cents per roll, which, if the weight is up to standard, would put the two latter on a basis of $20 a ton, f.o.b. works in Pennsylvania. There are some local disturbances where exceptional prices are made, one of which is a contest in Chicago between one of the oldest companies in the business and the youngest manufacturing coal tar products, which has caused some round lots of 500 tons or more to be sold in the Northwest for delivery at lake ports at $20 a ton for Tarred Felt Roofing.

Poultry Netting Staples.—Somewhat higher prices are ruling for Poultry Netting Staples, owing principally to the expiration of contracts which were made at a comparatively low figure.

Stove Pipe and Elbows.—Owing to the strike in the Sheet and Tin Plate mills, which has caused a shortage and heavy increase in the price of Sheets and Plates, most of the manufacturers of Stove Pipe, Furnace Pipe, Elbows and kindred goods have withdrawn their quotations and announce that quotations will be made only from day to day. The demand for this class of goods is very heavy at this season and the threatened shortage of material used in their manufacture has impelled consumers to rush in orders, which the dealers and manufacturers find it difficult to fill. The outlook favors considerably higher prices in all goods made of Sheets or Tin Plates.

Wire Nails.—The demand for Wire Nails in the New York market keeps up remarkably well for the season and prices are unchanged. Small lots from store are quoted at $2.60 per keg.

Cut Nails.—Cut Nails are moving in about the same volume as for some time past. Small lots from store are quoted at $2.18 to $2.25 per keg.

Wire.—There is a good demand and the mills are still somewhat behind in deliveries. Prices are firm, Plain Wire in a retail way being quoted at 2.60 cents per pound, and Galvanized at 3 cents.

White Lead.—The market for White Lead in Oil continues quiet, which is not an unexpected condition at this season. Quite an inquiry is reported for fall delivery, but in the present condition of the Linseed Oil market grinders are not inclined to name prices acceptable to large purchasers. Quotations are unchanged from those given for some weeks past.

Linseed Oil.—Buying is confined to small lots to cover immediate requirements for Linseed Oil. Buyers are looking for lower prices, but meanwhile quotations are unchanged, City Raw in a retail way ruling at 83 to 84

cents per gallon. Boiled Oil is 2 cents per gallon advance on Raw.

Spirits Turpentine.—An advance in the price of Turpentine in Southern markets has caused higher local quotations. This has curtailed buying, which is confined to small lots. The market is firm, small lots of Turpentine being quoted at 84 to 84½ cents per gallon.

TRADE NOTES.

THE STAR METAL STAMPING COMPANY of Davenport, Iowa, have been incorporated with a capital of $10,000. J. D. Bollman, M. M. Benedict and W. F. Lerch are the incorporators.

THE EMPIRE BRASS WORKS of Chicago, Ill., have been incorporated with a capital of $2500. The new company will engage in Iron and Brass founding. Richard H. Mathes, T. A. Breen and F. B. Murray are the incorporators.

THE SWARTS METAL REFINING COMPANY, manufacturers of Babbitt Metal, Solder, &c., and dealers in Old Metals, 20 North Desplaines street, Chicago, made an assignment on the 5th inst. to the Chicago Title & Trust Company for the benefit of their creditors. The company had been in existence for several years, and conducted a large business in their line. The president of the company is Seymour Swarts, who has long been engaged in the trade in Old Metals.

THE annual meeting of the stockholders of the Bristol Brass & Clock Company, Bristol, Conn., was held on the 24th ult. The following Board of Directors were chosen: J. H. Welch, Pierce N. Welch, New Haven; Henry F. English, New Haven; George S. Brown, New Britain; J. R. Holley, George W. Mitchell and Charles S. Treadway. The directors elected the following officers: President, J. Hart Welch of Forestville; secretary and treasurer, Julian R. Holley; assistant treasurer, George S. Brown.

THE WHITTAKER & WEBER MFG. COMPANY, St. Louis, Mo., manufacturers of Tinware, have increased their capital stock from $50,000 to $100,000.

The World's Coal Production.

The Board of Trade of Great Britain has issued a report on the production of coal in the various countries of the world. It is explained that the totals for the year 1900 are necessarily in many cases estimates only, as the definitive returns are not yet available for all countries. The following is a statement of the output of the principal coal producing countries for the past five years:

(000's *omitted.*)

Country.	1900. Tons.	1899. Tons.	1898. Tons.	1897. Tons.	1896. Tons.
United Kingdom	225,181	220.095	202,055	202,130	195,361
United States	245,422	226,554	196,406	178,930	171,416
Germany	109,225	101,460	96,310	91,055	85,690
France	32,587	32,256	31,826	30,337	28,750
Belgium	23,352	22,072	22,088	21,492	21,252
Russia	....	14,565	12,185	11,171	9,351
Austria-Hungary	....	12,694	12,186	11,611	11,033
Spain	2,773	2,565	2,434	2,011	1,853
Japan	....	6,722	6,696	5,188	5,020
India	....	4,937	4,606	4,063	3,848
New South Wales	5,507	4,597	4,706	4,384	3,910
Canada	4,761	4,506	3,726	3,380	3,344

It will be seen that the United Kingdom has in the past two years given way to the United States as the largest coal producer. The report states that the total production of the world is about 650,000,000 tons per annum, of which the United Kingdom produces rather more than a third, and the United Kingdom and the United States together account for nearly three-quarters.

JNO. H. BAND, JR., has bought Jno. H. Bryant's half interest in the Bryant & Boud Company, Cameron, Texas, a corporation with a capital stock of $35,000, Mr. Bryant retiring. The business will be continued as heretofore under the same name, with the following officers: Jno. H. Bond, Jr., president; E. Sanders, vice-president and general manager; M. S. Bond, secretary and treasurer; William Clifton being manager of the furniture department. The three latter have long been connected with the business and have been allowed to acquire some of the stock. At the annual meeting of the new directors a report was made showing that the past year had been a prosperous one for the company. The concern handle Hardware, Stoves, Tinware, Crockery, Buggies and Wagons, Agricultural Implements, Furniture, &c.

J. L. BROWNE, Indianola, Iowa, has disposed of his stock of Hardware, Stoves, Tinware, Farm Implements, Sporting Goods, Wagons, Buggies, &c., to McCoy Sons & Pollock. The new proprietors have enlarged the stock formerly carried and increased the capacity of their tin shop.

C. M. Schwab has approved the plans for the building designed to house the new industrial school which he will present to the borough of Homestead, Pa. The building, which is to cost $50,000, will be a substantial three-story and basement fire proof structure of brick, stone and steel, with concrete floors, 63 x 98 feet in area. It is expected to be finished and ready for use within a year.

CONTENTS.

	PAGE.
Editorials—	
Shorter Credits in the Stove Business	37
Furnace Heating with Natural Gas	37
Packing Goods for Export	37
The Western Stove Trade	39
What Cheer Circulating Wood Heaters	39
Riverside Stoves and Heaters	39
Etna Hot Air Furnace	39
A Furnace System Using Natural Gas. Illustrated	40
A Magnificent Stove Catalogue	44
Eclipse Stoves and Ranges	45
Twin Burner Stoves	45
Odd Plates	45
Stove and Hardware Dealers	46
A "Keep Cool" Window. Illustrated	47
White Enamel Refrigerators	48
Wire Wound Cast Iron Pipe	48
The Heating Trade in the West	48
The Comfort Steam and Hot Water Heaters. Illustrated	48
The Mueller Boiler. Illustrated	49
Champion Hot Water Combination Boilers	49
The Wireton Automatic Time Draft Regulator. Illustrated	50
Imico Heaters	50
New York City Notes	50
Heating and Plumbing Notes	50
New Firms and Changes	51
The Amalgamated Strike	52
Adjustable Stamped Metal Hip Shingle. Illustrated	53
Pancoast Ventilators	53
Flashings	53
Gas and Oil Fields of the West and Southwest	54
The Letter Box—	
Lining a Lead Tank	54
Calculation of Slate Roofing	54
Sheet Metal Boats	54
The Area of a Trapezium or Irregular Shaped Roof. Illustrated	55
How Should Radiators be Connected ?	55
Trade Report—	
Market Summary	56
Metal Market	56
The Pig Iron Market	57
Chicago Report	57
The Hardware Trade	58
Notes on Prices	58
Trade Notes	59
The World's Coal Production	59
Metal and Miscellaneous Prices	60
Labor Exchange—	
Help and Situations Wanted	64

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED AUGUST 9, 1901

The following New York quotations are for small lots:

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots.....℔ lb, 37¢
100-lb lots.....℔ lb, 35¢

Aluminum Sheet, B. & S. gauge.
In lots of 50 lbs or more.

	6-in.	14-in.	24-in.
Wider than.....	14-in	24-in.	30-in.
And including.....	℔ lb	℔ lb.	℔ lb.
Nos. 18 to 19.....	$0.42	$0.44	$0.47
" 20.....	.44	.46	.49
" 21 to 23.....	.46	.48	.51
" 24.....	.46	.50	.53
" 25.....	.47	.51	.54
" 26.....	.47	.54	.59
" 27.....	.48	.57	.62
" 28.....	.48	.57	.64
" 29.....	.49	.60	.69
" 30.....	.50	.64	.77

Note.—Lots of less than 50 lbs 5¢ ℔ lb extra.

Antimony—

Cookson.....℔ lb. 10½@11¢
Hallett's.....℔ lb, 8¾@9½¢
U. S.....℔ lb, 8¾@9¼¢

Brass—Planished.....net

Roll and Sheet.....15@20% off

Brass and Copper Tubes

Brazed Brass Tubing—

Brown & Sharpe's Gauge the Standard.

List Feb. 26, 1896.

Plain Round Tube.	Per lb.	
¼-in. up to 2-in.	$0.35	30@35% off.
⅜-in. up to ¾-in.	.36	
½-in. up to ⅝-in.	.38	
⅜-in. up to ½ in.	.41	
5-16-in. up to ⅜-in.	.48	
¼-in. up to 5-16-in.	.65	
3-16-in. up to ¼-in.	1.00	
⅛-in. up to 3-16-in.	1.50	
Smaller than ⅛-in.	Special	
3-in. and larger	Special	
2-in. to 3-in. to No. 19, inclusive.	.38	

Copper & Bronze Tubing—

8¢ ℔ lb more than Brass.

Conductors—

Corrugated. *Round or Square.*—
Galvanized ½ or more. N'st'd.....70&5%
" Not Nested.....70&2½%
" Plain Round, ½ or more. Nested.....70&5%
Galvanized, Plain Round, Not Nested. 70&2½%

Spiral Riveted.
Galvanized.....40%
See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—See *Strainers, Conductor.*

Copper—

Lake Ingot.....17¼@17⅝¢
Casting.....16¾@17 ¢
Sheet and Bolt.....21¢ ℔ lb basis
Cold Rolled Sheets.....22¢ ℔ lb basis
Cold Rolled and Polished Sheets..... 23¢ basis
Planished Sheets.....24¢ basis
Bottoms, Pits and Flats.....℔ lb 25¢ basis

Eaves Troughs—

List Feb. 1, 1895.

Lap or Slip Joint, Galvanized, in crates 75&10%

Eave Trough Mitres—

Lap or Slip Joint.....list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin.....30%
Galvanized.....30%
Perfect "Elbows.....40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz
No. 2.	.65	.70	.75	.80	.85 "
No. 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Corrugated

Round or Square.

Galvanized.....60%

Gasoline—See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16.....℔ lb	3.75....	3.80¢
Nos. 18 to 21.....℔ lb,	3.85....	3.90¢
Nos. 22 to 24.....℔ lb,	3.95....	4.00¢
Nos. 25 and 26...℔ lb,	4.05....	4.10¢
No. 27 .....℔ lb,	4.15....	4.20¢
No. 28 .....℔ lb,	4.25....	4.30¢

Russia, Planished, &c.

Genuine Russia, according to assortment.....℔ lb 10½¢
Do. Stained.....6¢@10¢
Patent Planished. ℔ lb A, 9¾¢; B, 8¾¢ net

Galvanized.

Nos. 10 to 16.....℔ lb,	12¢	60% off.
Nos. 17 to 21.....℔ lb,	13¢	
Nos. 22 to 24.....℔ lb,	14¢	
Nos. 25 to 26.....℔ lb,	15¢	
No. 27.....℔ lb,	16¢	
No. 28.....℔ lb,	17¢	
No. 29.....℔ lb,	19¢	
No. 30.....℔ lb,	21¢	

36 in. 1¢ ℔ lb higher

Kerosene—See *etroleum Products*

Lead—

American Pig.....4.60@4.62½¢
Bar.....5⅛@5¼¢
Pipe.....6½¢.....20% off
Tin Lined Pipe.....12½¢.....20% off
Block Tin Pipe.....40¢.....20% off
Sheet Lead, full rolls... 7¼¢ .....20% off
Sheet Lead, cut.....7¾¢.....20% off
Old Lead in exchange, 4½¢ ℔ lb.

Mitres, Eave Trough—See *Eave Trough Mitres.*

Nickel—

Per lb.....60@65¢

Paints, Oils, &c.—

Lead, White, Atlantic and Jewett's. 7¼¢
Lead. Amn. White, in oil..... 7@7¼¢
Lead, Red, bbls. and ½ bbls..... 7@7¼¢
Lead, Red, kegs..... 7@7¼¢
Linseed Oil:
Raw, ℔ gal.....83@84¢
Boiled.....85@86¢
Spirits Turpentine:
In bbls.....38 @38½¢
In cases.....46 @46½¢
Putty:
In barrels and ½ bbls.....2½
In tin cans.....3½
In bladders.....2¾¢

Palm Oil. 1500 lb casks.

Fancy Lagos.....℔ lb 6 ¢
Clarified.....℔ lb 5¾¢
Accra.....℔ lb 5½¢
Half Jack.....℔ lb 5¼¢

Petroleum Products—

In Barrels (Barrel Included)
Stove Gasoline.....℔ gal. 12½@13¢
Kerosene.....℔ gal. 13@13½¢

Pipe, Drain.....40%

Pipe, Spiral—See *Conductors*

Registers—

List Feb. 1, 1899.
Black Japanned.....50&10%
White Japanned.....40&10%
Nickel Plated.....50&10%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze.....40%
Electroplated in Brass, Bronze or Copper.....40%
White Porcelain.....20%
Solid Brass and Bronze Metal.....20%

Roofing Material—

Heavy Single Ply Tar Felt,.....℔ ton $30 00
2 Ply Roofing Felt.....℔ roll, 108 sq. ft. 65¢
3 Ply Roofing Felt....℔ roll, 108 sq. ft. 85¢
Roofing Pitch ℔ bbl.....$2 38

Rosin

(Barrels of 280 lb. Barrels weigh actually about 400 lb).
Common and Good—Strained.

Rosin, C. & D.....℔ bbl.	$1.40	@$1.42
Rosin, E. & F.....℔ bbl.	1.65	@ 1.75
Rosin, G. & H.....℔ bbl.	1.80	@ 1.85
Rosin, I. & K .....℔ bbl.	1.90	@ 2.35
Rosin, M. & N.....℔ bbl.	2.65	@ 3.10

Seamless Brass Tubes—

Net List, February 6, 1899.

Shoes and Elbows—See *Elbows and Shoes.*

Slate Roofing—

According to size, f. o. b. cars, Quarry Station.

Pennsylvania:
Best Bangor, ℔ sqr.....$3.25@$4.50
No. 1 Bangor Ribbon. ℔ sq 3.00@ 3.50
Pen Argyle, ℔ sqr..... 3.00@ 3.75
Peach Bottom, ℔ sqr..... 4.85@ 5.60
No. 1 Boys, ℔ sqr..... 3.35@ 3.55
No 1 Chapman Keystone, ℔ sqr..... 3.25@ 4.25
Vermont:
Sea Green, ℔ sqr.....$2.00@$3.00
Purple, ℔ sqr..... 3.75@ 4.25
Unfading Green, ℔ sqr... 3.25@ 4.50
Red, ℔ sqr..... 6.50@11.00
Maine:
Brownville, Unfading Black:
No. 1 quality.....$5.25@7.50
No. 2 quality.....$4.25@6.00

Solder—

½&¼ guaranteed.....19@19½¢
No. 1.....15 @17½¢
Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Concentrated Soldering Flux.
f.o.b. New York.
In barrels. ℔ lb.....4¢
Smaller quantities, ℔ lb.....5¢

Eureka Soldering Flux—Triple Strength
In barrels, ℔ lb.....3 ¢
Smaller quantities, ℔ lb.....3½¢

Eureka Soldering Flux—Extra Concentrated.
In barrels, ℔ lb.....4½¢
Smaller quantities, ℔ lb.....5 ¢

Eureka Soldering Flux—Crystal.
In 100-lb cases, ℔ lb.....7¢

Gedney's Soldering Fluid.
In carboys or barrels, ℔ lb.....2¢
$1.50 for carboy or barrel; money refunded when returned.

Lennox Soldering Fluid.
In barrels, ℔ lb.....2¢
In carboys. ℔ lb.....3¢

Perfection Soldering Flux.
No charge for package.
Bbls. about 500 lb, ℔ lb.....3¢
½ bbls., about 300 lb, ℔ lb.....3½¢
Kegs, about 110 lb, ℔ lb.....3½¢
Kegs about 55 lb, ℔ lb.....4¢

Yager's Soldering Salts.
1 lb bottles each.....60%
5 lb bottles, ℔ lb.....40%

Soldering Coppers—

Per lb.....22@24¢

Spelter—

Western Spelter.....4.45@4½¢

Spiral Pipe—See *Conductors.*

Stove Pipe Elbows—See *Elbows, Stove Pipe.*

Stove Trucks—See *Trucks, Stove*

Strainers, Conductor—

Galvanized.....50%

Tin Pigs and Bars—

Banca, pigs. ℔ lb.....28½@28¾¢
Straits, pigs, ℔ lb.....28¼@28½¢
Straits, in bars, ℔ lb.....29 @29½¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:

IC,	14 x 20.....	$8.25
IX,	14 x 20.....	9.75
IXX,	14 x 20.....	11.00
IXXX,	14 x 20.....	12.25
IXXXX,	14 x 20.....	13.50

Melyn Grade:

IC,	14 x 20.....	7.75
IX,	14 x 20.....	9.25
IXX,	14 x 20.....	10.50
IXXX,	14 x 20.....	11.75
IXXXX,	14 x 20.....	13.00

Allaway Grade:

IC,	14 x 20.....	7.35
IX,	14 x 20.....	8.35
IXX,	14 x 20.....	9.45
IXXX,	14 x 20.....	10.55
IXXXX,	14 x 20.....	11.65

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20.....	$7.00@7.25
" "	IX, 14 x 20.....	$7.75@8.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:
100 lb.....15¢
95 lb.....20¢
90 lb.....25¢
85 lb.....30¢

Terne Plates—

N. B.—The following prices are for IC, 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 lb coating and $2.50 to $3.00 advance for 15 lb and upward.

About 40 lb coating..... $18.50@19.00
About 30 lb coating..... 17.75@18.25
About 20 lb coating..... 15.75@16.25
About 15 lb coating..... 13.75@14.25
About 8 lb coating..... 12.50@13.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)..... $16.00
IXX, 14 x 28..(112 sheets)..... 17.00
IXX, 14 x 31..(112 sheets)..... 18.50

Troughs Eave—See *Eave Trough*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00
Steel Lock Frame, per doz..... 18.00
Daisy Improved pattern, ℔ doz... 18.00

Tubing—

Tin.....50% | Galvanized.....50%
Fittings for do.....40%

Zinc—

600 lb casks ℔ lb.....6¾¢
Per lb.....7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Fittings—

List of Oct 7, 1899

Cast Iron Fittings, Black and Galvanized, Standard sizes.....60@60&10
Cast Iron Bushings and Plugs....65@66⅔%
Cast Iron Flanges.....65@66⅔%
Malleable Iron Fittings.....50&5@55%
" " Bushings.....65@66⅔%
" " Unions.....65@66⅔%
Wrought " Nipples.....65@66⅔%
" " Couplings.....65@66⅔%
" " Long Screws.....65@66⅔%

Cast Iron Soil Pipe—

List Feb. 25, 1901.
2 to 6 inch inclusive.
Standard.....55&10@60%
Extra Heavy.....65@65&10%
All Fittings.....70&5@70&10%

Merchant Wrought Iron Pipe—

List Feb. 15, 1900
Random Lengths.

	Black	Galv
⅛ to ⅜ inch.....	50&5%	40%
½ to 10 inch.....	60%	40&10@50%
11 and 12 inch.....	50%	35%

Extra Strong Pipe—

Random Lengths

	Black	Galv.
⅛ to ⅜ in.....	45%	30%
½ to 2 in.....	45%	30%
2½ to 8 in.....	45%	30%

Valves Cocks, &c.—

Iron Body Valves.....65&5@70%
Air Cocks and Radiator Air Cocks..... 70@70&5%
Soldering Unions.....70@70&5%
" Nipples.....70@70&5%
Brass Unions (Rough and Finished).. 65&5@70%
Jenkins Bros.':
Iron Body Valves, except Gate Valves 55%
All Iron Valves, except Gate Valves.. 40%
Iron Body Gate Valves.....50%
All Iron Gate Valves.....35%
Iron Cocks, all Iron.....60&10%
" " with Brass Plugs.....60%
Brass Globe, Angle and Cross Valves... 65@65&10%
" and Angle Valves, hose outlet.....65@65&10%
Brass Garden Hose Valves....65@65&10%
" Horizontal, Vertical and Angle Check Valves.....65@65&10%
Brass Safety Valves.....55%
" " " Low Pressure....55%
Brass Radiator Valves.....65@65&10%
" " Jenkins.....55%
Brass Jenkins' Globe, Angle, Cross and Corner Valves.....55%
Brass Jenkins' Safety and Check Valves.....40%
Brass Jenkins' Gate Valves.....50%
Brass Steam Cocks.....65@65&10%
" Gas Meter and Union Meter Cocks.....65@65&10%
Brass Fittings, Rough.....65@65&5%
" " Finished.....65@65&5%
" Bushings.....65@65&10%

Plumbers' Brass Work—

List of December 7, 1896.

Gronnd Key Work:
Rough Bibs and Stops.....65@65&5%
Finished Bibs.....60@60&5%
Rough Stop and Stop and Waste Cocks.....65&5@70%
Rough Stop and Stop and Waste Cocks, Patented.....60@60&5%
Compression Bibs.....65@65&5%
" " Flanged.....65&10%
Compression Bath Cocks and Double Bath Cocks.....65@65&5%
Compression Basin Cocks.....65@65&5%
Fuller Bibs.....70@70&5%
Fuller Basin Cocks, Nos. 1 to 4.70@70&10%
Fuller Bath Cocks, No. 4½.....$2.25 net
Chain Stays.....60@60&5%
Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face....℔ set	$1.00	$1.10
Ground Face..℔ set	$1.05	$1.15

Basin Plugs.....60@60&10%
Sink or Bath and Wash Tray Plugs.... 60@60&10%
Basin Clamps.....70@70&10%

Bath Tubs—

Cast Iron Enamelo Bath Tubs.
List of March 26, 1900.
Regular Patterns. Guaranteed. Complete Line.....30&10@40%
All High Grade and Special Pattern (except as below).....20%
"Diana" and "Brighton."".....20%
Non-Guaranteed Brands, complete line.....40%
Steel Clad Copper Lined Bath Tubs, list of Feb. 1, 1899.....45@50%
Solid Porcelain Bath Tubs.....20%
Solid Copper, list of Feb. 1, 1899.....20%

Boilers—

Standard Boilers:
30 gal.....65@65&10%
35 and 40 gal.....65@65&5%
Other sizes up to 52 gal....50&10@60%
52 gal. and above.....50&10@60%
Extra Heavy Boilers:
18 to 52 gal.....50&10@60%
53 gal. and above.....40&10@45%

Sinks—

	Cast Iron—Black.	Galv.
Sinks, Square, Half Round and Corner.	50&5%	50&10@60%
Sink Legs.	50&5%	50&10@60%
Sink Backs	50&5%	50&10@60%

Wrought Steel—

New Era, Galv'd and Enameled. ..70&5%
New Era, Painted.....50&10%
L. & G.....50%

Miscellaneous—

Earthenware, List of July 17, 1899.....
Basins, Urinals and Hoppers.....40%
Closet Bowls, Sundries, Washouts and Pedestals.....40%
Drawn Lead Traps, List of June 8, 1901.....40&10@50%

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Young, Jos. H., Boston, Mass.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

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Stover Mfg. Co., Freeport, Ill.
Troy Nickel Works, Troy, N. Y.

Potato Masher.
Vogel, Wm. & Bros., 37 to 47 S. 9th St., Brooklyn, N. Y.

Presses and Dies.
American Hardware Mfg. Co., Ottawa Ill.
Bliss, E. W. Co., Brooklyn, N. Y.
Garvin Machine Co., 257 Spring Street, New York.
Gordon, W. J., Philadelphia, Pa.
Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Swaine, F. J. Co., St. Louis, Mo.

Punching Machines.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Garvin Machine Co., 257 Spring Street, New York.
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Toledo Mach. & Tool Co., Toledo, O.

Radiator Pedestals.
Atlas Radiator Pedestal Co., New London, Conn.

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Burton, W. J. & Co., Detroit, Mich
Independent Register Co., Cleveland, Ohio.
Rochester Radiator Co., Rochester, N. Y.

Radiators, Steam and Hot Water.
Gurney Heater Mfg. Co., Boston, Mass.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.

Range Boilers.
Koven, L. O. & Bro., 50 Cliff St., N. Y

Reflectors.
Frink, I. P., 551 Pearl St., New York.

Registers.
Canton Steel Roofing Co., Canton, O.
Dighton Furnace Co., Taunton, Mass.
Independent Register Co., Cleveland, Ohio.
Seavey Mfg. Co., Boston, Mass.

Roofing.
Asphalt Ready Roofing Co., 136 Water St., N. Y

Roofing Cement and Paint.
Callahan, Geo. & Co., 218 Front Street, N. Y.
Connors, Wm. Paint Mfg. Co., Troy, N. Y.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Perkins, J. L. & Co., Chicago.

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Berger Mfg. Co., Canton, O.
Burton, W. J. & Co., Detroit, Mich.
Canton Steel Roofing Co., Canton, O.
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Garvin Machine Co., 257 Spring Street, New York.
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SEE ALPHABETICAL INDEX, PAGE 61.

Miner & Peck Mfg. Co., New Haven, Conn.
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Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
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Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
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Shot.
Colwell Lead Co., 63 Centre St., N. Y.

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Lalance & Grosjean Mfg. Co., 19 Cliff St., New York.

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Canton Steel Roofing Co., Canton, O.
Dronve, G. Co., Bridgeport, Conn.
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Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

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Gunster & Forsyth, Scranton, Pa.

Snow Guards.
Clason Arch. Metal Works, Providence, R. I.

Solder.
Bruce & Cook, 186 to 190 Water St., NY.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Sanborn, J., 217 Water St., N. Y.
Taylor, N. & G. Co., Philadelphia Pa.

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Burgess Soldering Furnace Co., Columbus, Ohio.

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Ostrander, W. R. & Co., 204 Fulton St., N. Y.

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Vogel, Wm. & Bros., Brooklyn, N. Y.

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Curtis & Curtis Co., Bridgeport, Conn.

Steam and Water Engineering and Regulating Specialties.
Kieley & Mueller, 7-11 West 13th St., N. Y.

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Sackman, F. A., Cleveland, O.
Schwerdtle Stamp Co., Bridgeport, Ct.

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Dixon, Jos. Crucible Co., Jersey City, N. J.

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Bridgeport Crucible Co., Bridgeport, Conn.
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Marcy Stove Repair Co., 74 Beekman St., N. Y.
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Troy Nickel Works, Troy, N. Y.

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Beckwith, P. D., Est. of, Dowagiac, Mich.
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Boynton Furnace Co., 207 Water St., N. Y.
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Dighton Furnace Co., Taunton, Mass
Eclipse Stove Co., Mansfield, O.
Enterprise Stove Co., Vincennes, Ind.
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Gurney & Co., Boston, Mass.
Joliet Stove Works, Joliet, Ill.
Keeley Stove Co., Columbia, Pa.
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Magee Furnace Co., Boston, Mass.
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Phillips & Clark Stove Co., Geneva, N. Y.
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Portsmouth Stove & Range Co., Portsmouth, O.
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Richmond Stove Co., Norwich, Conn.
Ringen Stove Co., St. Louis, Mo.
Schneider & Trenkamp Co., Cleveland, O.
Shennard, Isaac A. & Co., Phila., Pa.
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Tinnerman Steel Range Co., Cleveland, Ohio.
Weir Stove Co., Taunton, Mass
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Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Ringen Stove Co., St. Louis, Mo.
Standard Lighting Co., Cleveland, O.

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Hessler, H. E. Co., Syracuse N. Y.
Keeley Stove Co., Columbia, Pa.
Rathbone, Sard & Co., Albany, N. Y.
Ringen Stove Co., St. Louis Mo.
Schneider & Trenkamp Co., Cleveland, O.
Standard Lighting Co., Cleveland, O.

Street Lamps.
Dietz, R. E. Co., New York

Street Lamps, Gasolene.
Merkel, H., St. Louis, Mo.

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American Tin Plate Co., New York.

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Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y.

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Vogel, Wm. & Bros. Brooklyn, N. Y.

Tin Plate.
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Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
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Taylor, N. & G. Co., Philadelphia, Pa.

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Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co., Streator, Ill.

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Globe Ventilator Co., Troy, N. Y.
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Shepard, Sidney & Co., Buffalo, N. Y.

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Marston, I. G. & Co., Boston, Mass

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Wayne Anthony Mfg. Co., Ft. Wayne, Ind.

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Colwell Lead Co., 63 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.

Water Heaters.
Adam, W. J., Joliet, Ill.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Water Lifts.
Rhodes, L. E. Co., Hartford, Conn.

Wind Gates.
Miner & Peck Mfg. Co., NewHaven, Ct.

Window Frames, Metal.
Smith-Warren Co., Boston, Mass.

SEE ALPHABETICAL INDEX, PAGE 61.

THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

Published Weekly at the Following Subscription Price:

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DAVID WILLIAMS COMPANY, Publishers.

232, 234, 236 and 238 William Street, NEW YORK. 805 Fisher Building, CHICAGO.

New York (Main Office), - -	232-238 William Street, - - - - - -	JOHN S. KING, General Manager.
Philadelphia, - - - - - -	Forrest Building, 117-119 South Fourth Street, - -	THOMAS HOBSON, Manager.
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LONDON OFFICE: Hastings House, Norfolk Street, Strand.

AUSTRALIAN OFFICES: Melbourne, Hardware Chambers, 231 Elizabeth Street; Sydney, Paling's Buildings.

Remittances should be made by draft, payable to the order of DAVID WILLIAMS COMPANY, on any banking house in the United States or Europe, or by P. O. Money Order on New York. When these cannot be obtained, postage stamps of any country will be received.

Newsdealers or Booksellers in any part of the world may obtain *The Metal Worker* through The American News Company, New York, U. S. A.; The International News Company, New York, U. S. A., and London, England; or The San Francisco News Company, San Francisco, Cal., U. S. A.

Entered at the Post Office, New York, as Second-class Matter.

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

TINNER and PLUMBER; must be sober and reliable; steady work at $2.25 a day. C. M. Dorr, Hoosick Falls, N. Y. Aug. 10

Two or three CORNICE MAKERS for in and outside work; must be hustlers; good wages; apply at once or ready for work. Newburgh Cornice Works, Newburgh, N. Y. Aug. 10

First-class CORNICE and SKYLIGHT MAKER; steady job, good wages, eight hours, for the right man. Rourke Bros., New Haven, Conn. Aug. 10

Wanted at once, a first-class TINNER; one who has a thorough knowledge of hot air furnaces, to install work, &c.; state age, experience and salary expected. L. P. Willward, Lexington, Ky. Aug. 10

FOREMAN who understands cornice, skylight and sheet metal business, cut patterns, who can handle men; sober and a hustler; state wages expected; answer at once. J. Walsh, 1455 St. Clair street, Cleveland, Ohio. Aug. 10

STOVE PATTERN FILER and FITTER. The A. T. Nye & Son Company, Marietta, Ohio. Aug. 10

A first-class TINNER who can do all kinds of roofing, bench work, furnace work and general jobbing; position is good the year around; prefer a man who can do plumbing. East End Hardware Company, Sunbury, Pa. Aug. 10

SALESMAN (traveling) visiting the plumbing trade to handle a very salable specialty as a side line; liberal arrangements will be made with the party. Necessity Mfg. Company, 356 Bleecker street, New York. Aug. 10

TINSMITH for shop work, roofing and furnace work; steady work for a competent man; give experience and wages wanted. J. H. Brown, 372 North street, Rochester, N. Y. Aug. 10

Two PLUMBERS and GAS FITTERS; steady work to right parties; $3 for nine hours. The Parkersburg Supply & Plumbing Company, Parkersburg, W. Va. Aug. 10

A SALESMAN for Western New York territory; one who has an acquaintance with trade in that section, and who can show good references. "Western," care *The Metal Worker,* New York. Aug. 10

A thorough up to date STEEL RANGE worker; steady position, good place to right man; only a good man will be considered. "R. F. G.," care *The Metal Worker,* Cincinnati, Ohio. Aug. 10

Good man for inside and outside general all around tinsmith work; must be able to do all kinds of cornice and skylight work, cut his own patterns and take care of job when necessary; right man will find steady position all year around at moderate wages; if not able to call write stating what wages are expected and what work in particular you are able to do to Osmar Poeschel, 606-614 Spring street, West Hoboken, N. J. Aug. 10

At once, two STOVE MOUNTERS. Ohio Stove Company, Portsmouth, Ohio. Aug. 3

FOUNDRY FLASK MAKERS, to go out of the city; good wages. C. C. Heath & Co., 63 North Second street, Philadelphia, Pa. Aug. 3

Young man acquainted with builders and architects in and nearby Philadelphia, to sell furnaces. C. C. Heath & Co., 63 North Second street, Philadelphia, Pa. Aug. 3

TINSMITH and SHEET IRON WORKER at once; first-class workman thoroughly familiar with all branches of the business; steady job to a good reliable man, no others need apply; state wages and experience. Lock Box 1086, Southbridge, Mass. Aug. 3

Two SALESMEN on stoves, ranges, heaters, gas and oil goods; those having had experience with dry goods houses preferred; good opportunity for the right parties; security required. Call or address John M. Wolf Company, 742-44 Flushing avenue, Brooklyn, N. Y. Aug. 3

A No. 1 PLUMBER, TINNER and BICYCLE MAN; must be first-class workman, sober and industrious; good wages to right man. Box 127, care *The Metal Worker,* 1205 Fisher Building, Chicago, Ill. Aug. 3

An A1 TINNER and FURNACEMAN; state experience, age, wages. Stephenson, Lakewood, N. J. Aug. 3

Two TINSMITHS of experience, with brains and a reasonable amount of ambition; good steady job for two men with above qualifications; no botches need answer. E. Dodge, West New Brighton, Staten Island, N. Y. Aug. 3

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A competent, experienced FOREMAN for range manufacturing; one who understands the mounting of castings and riveting and cutting sheets for ranges. Apply Box 206, Memphis, Tenn. Aug. 3

A first-class FOREMAN for an architectural steel metal works; must be a first-class foreman for cornices and have had experience in all branches of the manufacturing of sheet metal ornaments; must be a thorough mechanic, energetic and sober; steady work and excellent wages for the right man; state salary expected and where employed last. "Stamping," care *The Metal Worker,* New York. Aug. 3

Three or four good TIN and SHEET IRON WORKERS. Apply or address United States Headlight Company, Buffalo, N. Y. Aug. 3

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Four first-class TIN and SHEET METAL WORKERS at once; will pay $2.50 per day of nine hours. Estes Hardware Company, Birmingham, Ala. Aug. 3

A first-class CORNICE CUTTER in a large shop in New York. "A. Z.," care *The Metal Worker,* New York. Aug. 3

SITUATIONS WANTED.

By a practical PLUMBER and GAS FITTER; 15 years' experience; can estimate from plans and plan work; strictly reliable and up to date. John Williams, General Delivery, Watertown, N. Y. Aug. 10

PLUMBER and TINSMITH would like a position, city or country. "Doellner," Bronxville, N. Y. Aug. 10

Youth, 19, respectable, who has had experience in skylight and cornice work, wishes to get into some good sheet metal and furnace shop as finisher. Care Miss Eger, Rockaway Road, Centreville avenue, Ozner Park, L. I. Aug. 10

By a practical PLUMBER, GAS and STEAM FITTER; a neat and quick lead worker; capable of doing all kinds of work pertaining to the trade of a plumber; strictly sober and reliable; a hustler and up to date; will go to work on trial; best of reference given from last employer; had 12 years' experience. "Plumber," 50 Mill street, Watertown, N. Y. Aug. 10

Young man with 12 years' experience in hardware store and tin shop, up to date in furnace business, with best of reference, desires position. W. H. Barrett, 424 West Thirteenth street, Kansas City, Mo. Aug. 10

Practical TIN and SHEET IRON WORKER, any kind, inside or out, piece or day, or general jobbing shop. H. Smith, 284 Third avenue, New York. Aug. 10

Steady employment year around, by a reliable TINSMITH; understands pump, pipe work, wind mill and steam fitting; sober and steady; wages, $10 per week for steady position. "S. T.," South Deerfield, Mass. Aug. 10

As SUPERINTENDENT or HEAD FOREMAN in refrigerator factory; have eight years' experience, thoroughly understanding refrigeration and construction; also copper bar work and special sheet metal fixtures; am a first-class sheet metal worker and cutter; handle help successfully and economically; age 37 and married; strictly temperate and give best of reference; will start in at $1000 per year; will go anywhere. Care *The Metal Worker, New York.* Aug. 10

Practical PLUMBER wants work, city or country; wages moderate; references. Joseph Fitz Patrick, 224 East Fifty-sixth street, New York. Aug. 10

By first-class PLUMBER and GAS FITTER; sober, reliable and will work for his employer's best interests; can estimate from plans and plan; capable of taking charge of work; am not afraid of work; satisfaction guaranteed as to my ability as a mechanic; correspondence solicited; Massachusetts or Connecticut preferred. William Nolan, plumber, Watertown, N. Y. Aug. 10

STEAM FITTER; first-class; able to estimate from plans, lay out work, take charge heating or power work; good solicitor, A1 mechanic; city or country. "Construction," care *The Metal Worker,* New York. Aug. 10

Steam and hot water heating, hot air furnace work; practical mechanic acquainted in building line, New York City, desires position as SALESMAN, ESTIMATOR or SUPERINTENDENT, "F. G. H.," 160 Bleecker street, New York City. Aug. 10

A good all around workman at TINNING and PLUMBING; experienced in city and country work. Lester Hemenway, Pittsfield, Mass. Aug. 10

A first-class METAL PATTERN FITTER who understands the stove and register business in all of its branches, also the handling of men, would like position as traveling salesman or to take charge of a shop in either line. O. H. Ernst, P. O. Box 775, Chagrin Falls, Ohio. Aug. 10

Young man, 33 years old, desires position with a good retail or wholesale hardware firm; has had 15 years' experience in retail store; can speak Scandinavian, and a good all around man; best of references. Lew Matson, Clear Lake, Iowa. Aug. 10

Position wanted by young man, 22 years, as HELPER in an up to date all around plumbing establishment; 2 years' experience; can furnish reference as to ability, sobriety and honesty; wages, including board, $104 year. 10 Schuyler street, second floor, Cohoes, N. Y. Aug. 10

As DRAFTSMAN and CUTTER and to make estimates on galvanized iron cornice, skylights, tin and slate work and general sheet metal work; qualified to take charge of shop and handle men to advantage. "Sheet Metal," 137 West Second street, Lexington, Ky. Aug. 10

By an experienced man who is familiar with the details of the stove and furnace business and has had a practical and varied experience in putting these goods on the market; can command a good business with the right line of goods; would like a position with a good live house. "B. N. Y.," care *The Metal Worker,* New York. Aug. 3

By an experienced TINNER and PLUMBER; can give good reference; Oregon or California preferred. P. O. Box 146, Independence, Oregon. Aug. 3

In tin shop; three years' experience; some knowledge of slating; can do work that comes to ordinary tin shop; Eastern Iowa or Western Illinois preferred; am steady, strictly temperate, and not afraid to work; can give references. "H. C. H.," Box 363, Fairbury, Neb. Aug. 3

TINSMITH on brass, copper and brazing work; good all around man. L. Chass, 186 Norfolk street, New York. Aug. 3

PLUMBER and GAS FITTER to go anywhere; has worked in a country town; first-class reference. E. Walsh, 7 East Eighty-first street, New York. Aug. 3

TINSMITH; 16 years' experience at inside and outside job work and assortment work; permanent position desired; will be at liberty August 15; references if required. Ed. Grove, Room C, Sturges Block, Mansfield, Ohio. Aug. 3

By a first-class TINSMITH, ROOFER and FURNACEMAN, a steady position in New York, Brooklyn or Jersey City; wages moderate; best of references. John Madden, Eighth avenue, between Thirty-seventh and Thirty-eighth streets, Brooklyn, N. Y. Aug. 3

A practical STEEL RANGE BUILDER with 14 years' steady experience as a working foreman; up to date; to produce a range or cook at a minimum cost; married; strictly temperate; age 33; best of references. "B. W. I.," care *The Metal Worker,* New York. Aug. 3

By a first-class TINNER (35); married; 15 years' experience; desire steady position with a first-class firm in Colorado or California; can do tin roofing, guttering, slate roofing, pump and some furnace work; 10 years with present employer; reason for change, wife's health is poor. J. A. Willson, Harrodsburg, Ky. Aug. 3

Young man with several years' experience in the range and heating business as shipping, bill and entry clerk wishes a position in that line; some knowledge of bookkeeping. "R. D.," care *The Metal Worker,* New York. Aug. 3

All around hand and good PLUMBER; country preferred. Harry Rosenbloom, 92 Madison street, New York. Aug. 3

SALESMAN with ten years' experience in the stove and furnace business wishes engagement; single, temperate; a hustler; good references. "Furnastore," care *The Metal Worker,* New York. Aug. 3

WANTED.

A responsible boiler foundry to manufacture a horizontal sectional cast iron boiler having push nipple connections This boiler has been on the market for the past four years. The patterns are made from cast iron, with all necessary core plates, iron flasks, jigs, &c.

DAVIDSON HEATING & CONSTRUCTION CO.,
Hanover, Pa

FOR SALE.

An established Stove and Tinware Business, having also a large Tin Roofing and Furnace Trade, at a great bargain. Engaged in other business the reason for selling. Address

"ESTABLISHED,"
Care *The Metal Worker*, New York.

FOR SALE.

Well established Roofing, Furnace and Range Business, also good Plumbing Trade on hand, in New York City. Will sell cheap.

"WHITE,"
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FOR SALE.

A Roofing and Furnace Shop in New York City, established 18 years. An exceptional opportunity to secure a good paying business cheap. For particnlars address

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Care *The Metal Worker*, New York.

FOR SALE.

A Tin, Iron and Slate Roofing business, established 1868, in a town of 15,000, with an abundance of adjoining country villages. Busy the year round. Tools and good will may be had very reasonably. Present location may be had. A splendid opportunity for making money.

GEO. J. BERG, Ironton, Ohio.

FOR SALE,

On account of interests elsewhere, I offer for sale an old-established, first-class Plumbing, Tinning and Stove business in good location and plenty of work.

GEORGE MORTON,
Ansonia, Conn.

FOR SALE.

Plumbing, Tin and Heating Shop, in one of the best towns in Western N. Y. Good chance for a good plumber and tinner with small capital. Address

"TONGS," Care *The Metal Worker*, New York.

FOR SALE.

Good clean stock of Hardware. Stoves, Queensware and Furniture, in a live town of 2 000 inhabitants in Central Illinois. Will invoice about $6,000. Will sell or rent building. Do a good business. Good reasons for selling. Cash for stock. Address

DILWORTH CARTER, Astoria, Ills.

FOR SALE.

One complete set of Tinners' Tools and Machines and also set of Plumbing Tools. In good order. Address

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Fairbury, Ills.

Business For Sale,

In growing village of 6,000 inhabitants. A Stove, Tin, Hardware, Sporting Goods and House-furnishing business. Rooms also for a Plumber's shop; have been used as such. Will be sold cheap for cash, or part cash and part notes. Reasons for selling. Write to

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For Sale.

Well established hardware, tin and stove business, together with a well paying tinshop, with or without property. Is one of the best locations for an enterprising man to make money.

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New York Trade School

TWENTY-FIRST YEAR.

Plumbing.

A six months' evening course in Plumbing, three evenings a week, begins on Oct. 14, 1901. Tuition fee for the full term, $14.

A four months' day course in Plumbing, 8.30 a.m. to 4 p m. daily, begins on Dec. 9, 1901. Tuition fee for the full term, $40.

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A six months' evening course in Steam and Hot Water Fitting, three evenings a week, begins on Oct. 14, 1901. Tuition fee for the full term, $14.

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Cornice, Skylight Work and Pattern Cutting.

A six months' evening course in Cornice, Skylight Work and Pattern Cutting, three evenings a week begins on Oct. 14, 1901. Tuition fee for the full term, $12

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Classes also in Bricklaying, Plastering, Carpentry, House, Sign and Fresco Painting, Blacksmithing, Printing, Electrical Work, Pattern Making and Drawing.

Write for catalogue. Address

NEW YORK TRADE SCHOOL,
1st Ave., 67th and 68th Sts., N. Y. City.

FOR SALE.

Two No. 10 Pease Economy Portable Hot Air Furnaces with casings.

One No 9 Winchester Hot Water Boiler.

One No. 224 Richmond Sectional Steam Boiler, Pat. Feb. 9th, 1892, 10 sections, size of fire box 24 in x 48 in. Second hand, in good condition.

WHITCOMB, KIRKHAM & GRAY,
140 Srate St., Springfield, Mass.

WANTED TO BUY.

Second-hand, in good order, 1 P. S. & W. adjustable bar tin folding machine, No. 154 or No. 54, 30 inch; address FRANK E. LAHR, Lincoln, Neb.

Wanted, Agents To Handle

blocks of territory for our new improved Gasoline Lighting System, designed for store, church and factory lighting. Gives better light than electricity at less cost to operate than oil lamps. A money maker for right parties. Address

THE IMPROVED GASOLINE INCANDESCENT LIGHT CO., LTD.,
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One Forbes or Curtis Hand Pipe Machine which will cut from 4 to 6 in. pipe, with cutter. State the condition of the machine, length of time used and lowest price for cash.

Freeport Plumbing & Heating Co.,
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An old established Stove, Tin and House Furnishing store, with a good Roofing, Heating, Plumbing, Pump and Windmill trade. Population over 2,000. Will invoice $2,000 to $3,000. Address

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If you advertise or intend to these ads. are worth 10 times what they cost you. Increased our sales. Catchy headlines; ready for printer. Stamps taken. Address H. P. TOWNLEY, Terre Haute, Ind

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Well established. Doing retail-wholesale business present owners very desirous of retiring from store trade. Will arrange special terms with right party for purchase within next 30 days. Address "HARDWARE BUSINESS," care *The Metal Worker*, New York.

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ANY SIZE OR SHAPE.

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PATENT PRACTICE EXCLUSIVELY.
References Furnished on Application.

E. B. STOCKING, Attorney at Law,
611 F ST., N. W., WASHINGTON, D. C.

ESTABLISHED 1853.

Howson & Howson,

Counsellors at Law,
Solicitors of Patents.

OFFICES:

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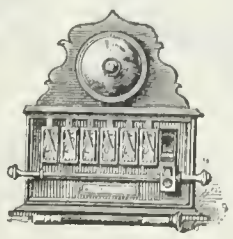
West End Building, 32 So. Broad St.
NEW YORK,
Potter Building, 38 Park Row.
WASHINGTON,
National Union Building, 918 F St.



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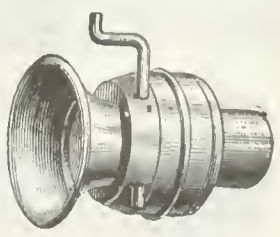
Complete outfits of Speaking Tubes, Whistles, Pneumatic Bells, &c. A full line of Speaking Tube Hardware constantly on hand. Factory, DeKalb Ave., near Knickerbocker, Brooklyn, L. I.

CATALOGUES ON APPLICATION.



DECISION OF THE UNITED STATES CIRCUIT COURT

SUSTAINING

Lalance & Grosjean Mfg. Co.'s Label.

This Label was originated and is used by us to distinguish our ABSOLUTELY PURE

Agate Nickel-Steel Ware

from other goods, containing either

ARSENIC, LEAD OR ANTIMONY

in the enamel coating.

The Court, limiting its decision to the use of the label only, rules as follows, under date of April, 15, 1901: "Complainants may take a preliminary injunction against the use of the labels, Exhibit G (of the ***National Enameling and Stamping Co.***) or of any similar labels, which by the collocation of size, colors, shape, spacing and lettering may present as close a resemblance to complainants' label Exhibit F (see copy of label adjoining) as do the said labels. Exhibit G (on Granite Ware)."

Notice to the Trade:

The trade is hereby notified that any sales of the so-called "Granite Iron or Steel Ware" under labels like our rectangular labels referred to in above decision, is a direct infringement of our rights as established by the above adjudication and entitles us to claim damages.

Notwithstanding reports to the contrary, we are ***NOT*** members of any "Trust" or "Association," nor have we entered into any "Gentlemen's Agreement" regarding prices on Tinned, Galvanized, Japanned or Enameled Wares, or any other goods we manufacture.

LALANCE & GROSJEAN MFG. CO.,

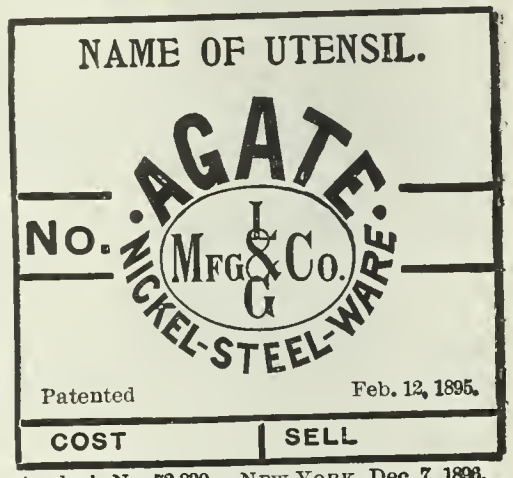
CHICAGO. NEW YORK. BOSTON.

This is a copy of the LABEL, which is printed on BLUE paper and pasted on each piece of GENUINE

AGATE NICKEL-STEEL WARE

as a guarantee of

ABSOLUTE PURITY.



Analysis No. 72,339. NEW YORK, Dec. 7, 1896.

We have made a careful examination of a sample of "Agate Nickel Steel Ware" received from The Lalance & Grosjean Mfg. Co., Nov. 30, 1896.

The enamel coating is homogeneous, of extra thickness, and great purity.

It is *entirely free from arsenic, lead* and *antimony*—metals so often found in enameled goods.

Very respectfully,
STILLWELL & GLADDING,
Chemists to the New York Produce Exchange.

Pierre de P. Ricketts, E.M., Ph.D. John H. Banks, E.M., Ph.D.
Analysis No. 14,180. NEW YORK, May 5, 1897.
LALANCE & GROSJEAN MFG. CO.

GENTLEMEN:—As requested by you, we purchased in the open market a sample of "Agate Nickel Steel Ware" and have made a careful chemical analysis of the enamel covering of the same.

We find this enamel is *absolutely pure* and *free from Arsenic, Antimony, Lead* and *other substances injurious to health.* We can therefore recommend it for all culinary and drinking purposes. Respectfully yours,
RICKETTS & BANKS,
Chemists to the N. Y. Metal Exchange.

Guaranteed Double Coated and Absolutely Pure

Copyrighted.

CHEAPEST and BEST

SIZES: 3/8 and 1/2 inch.

J. M. LITCHFIELD,
105 Beekman St., New York.

COPPER Lightning Rods ...

Absolute Protection from Lightning is given by use of our continuous copper conductors

E. G. WASHBURNE & CO.,
Telephone, 3125 Cortlandt. **46 Cortlandt St. New York.**
Work put up or material furnished.

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LARGEST MAKERS OF
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Mark Your Tools with a Steel Stamp.

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SPECIAL WORK IN ALL SHEET METALS.

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ZINC,
BRASS,
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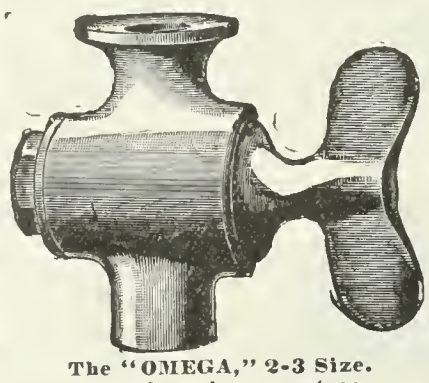
Stamping, Drawing and Presswork of every variety. Oilers, Can Screws and Trimmings, Mechanical Devices and Parts made to order from Specifications, Drawings and Samples.

37 to 47 South 9th St., 433-435 Kent Ave.. } ***BROOKLYN, N. Y.***



The "OMEGA," 2-3 Size. To attach to bottom of can.

BEER,
MILK CAN,
OIL CAN,
CREAM SEPARATOR

FAUCETS.

Various Sizes and Styles.

MANUFACTURED BY

CLARK NOVELTY CO., Rochester, N. Y.

Also Mfrs. of THE CLARK KEROSENE OIL SYSTEM for HEATING SOLDERING COPPERS.

Dietz Nos. 1 and 2

Blizzard Dash Lamp

(COLD BLAST)

FOR KEROSENE.

These are our well liked Nos. 1 and 2 Blizzard, made with reflectors for use as Dash Lamps. They are made on the new COLD BLAST PRINCIPLE, give an extra fine light, and will stay alight in ANY WIND.

They are very convenient, combination Lanterns, and can be used as Hand Lanterns, Wall Lamps or Dash Lamps, and are fitted with the same convenient Side Lift as our regular Blizzard Lanterns. For use on the dash, each lamp is provided with a strong spring to clasp over the dash.

No. 1 is japanned blue, is fitted with our patent Bull's-eye lens on perforated plate, takes a 5/8-in. Burner and Blizzard Globe, and holds oil to burn 14½ hours.

No. 2 is japanned blue, takes a 1-inch Burner and Blizzard Globe, and holds oil to burn 19 hours. The oil pots of these lanterns are drawn from tinned sheet steel, and are re-tinned after being shaped. This adds largely to their lasting qualities.

All DIETZ LANTERNS are SAFE and RELIABLE.

Where a Dash Lantern is required, giving a large light, these are unequaled.

FOR SALE BY

ALL LIVE JOBBERS.

If you handle lanterns send to us for a catalogue and to your jobber for prices.

R. E. DIETZ COMPANY, New York City.

Established 1840.

AMERICAN SEAL

Metallic and Graphite Paints

For Tin, Iron and Shingle Roofs, Structural Iron Work, Corrugated and Galvanized Iron Buildings, Trolley and Telegraph Poles, Fence, Barn and Cast Iron Work.

Mixed Ready for Use and in Paste Form. Ground in Pure Linseed Oil and Warranted the Best Paint.

FOR ROOF PAINTING

These Paints are especially prepared and make an Indestructible Coating of Elastic Paint, that when used on Tin or Iron does not crack; is unaffected by heat or cold, and can be used any place where a tough and durable paint is required

THE WILLIAM CONNORS PAINT MFG. CO., TROY, N. Y.

SPERRY'S SUGAR KETTLES.

Light, smooth, full measure and guaranteed perfect. Made from original patterns. Metal, the right kind in the right place. Ask your Jobber for them or write us.

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HOLLOW-WARE FOUNDERS,

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WASHING MACHINES

The largest and best assortment are made at our two factories, Ft. Wayne, Ind., and St. Louis, Mo. We make 16 different styles and can furnish jobbers and dealers all the styles they desire in one carload. Please send for Catalogue and Prices.

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ROOFING SLATE.

We are exclusive selling agents for the following brands:

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SLATE BLACKBOARDS, STRUCTURAL SLATE
AND SLATERS' SUPPLIES.

WRITE FOR PRICES.

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Copper and Galvanized Iron for Slate and Metal Roofs.

In use wherever the snow flies.

Write for Prices.

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SLATERS' TOOLS,
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Manufacturers of Genuine Bangor No. 1 and No. 1 Ribbon Slate, and dealers in Penna. Black and Sea Green Slates, Slaters' Tools, Cement, Nails, etc. Write for our new Book on Slate and Prices.

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SHEETS AND INGOTS.
We also buy SCRAP ALUMINUM.
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Brass, Copper, Galvanized Iron, and with Plate Glass Tops for Skylight Purposes.

SIMPLE, STORMPROOF, EFFECTIVE, ORNAMENTAL.

Smoky Chimneys Cured. Send for Model and Pamphlet.

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The Best and Cheapest

VENTILATOR

MADE BY

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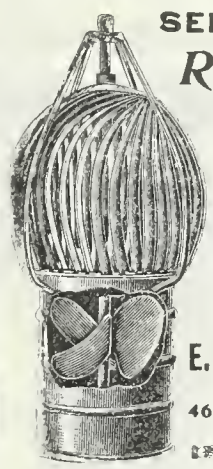

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The only positive cure for Smoky Chimneys, Poor Draught and Ventilation. Adopted and used successfully on Private Residences, Greenhouses, Hotels, Breweries, Public Buildings, etc., etc.

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The most perfectly cut and brightest tinned straps ever sold.

MALLEABLE AND WROUGHT HOOKS.

Quality the best than can be made. Don't buy before getting our prices. All kinds of Hooks, Straps and Pipe Fasteners for both plumbers and tinners.

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Different from all others and better. For particulars address

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For ventilation, the best.

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Made in two grades, 4 in. to 30 in.

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ELASTIC PAINT OIL. . . Actually more durable than Linseed for Roof Painting. Will not peel, blister or crack. 45c. per gal.

RUBBER ROOF CEMENT. Always elastic. Very adhesive. Never gets hard in packages. Never brittle on roof. *Sticks to wet roof.*

PIPE JOINT CEMENT . . Makes unleakable joints, but admits of easy separation. Prevents all rusting. Is actually cheaper than red lead and better.

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Mfrs. Machinery and Cylinder Oils, Belt Dressing Greases, &c. Plumbers' and Tinners' Sundries. Our Cutting Oil at 60c. per gal. is equal to best Lard Oil. Our Ajax Cutting Oil at 40c. gal. is better than most cutting oil sold.

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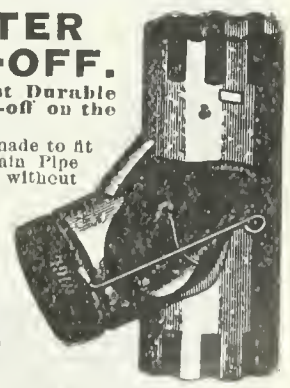
THE "CENTENNIAL" RAIN WATER CUT-OFF.



The Strongest, Most Durable and Cheapest Cut-off on the market.

The only single Cut off made to fit **Corrugated** and Plain Pipe and which can be used without extra pipe or elbows.

For sale by all leading jobbers.

Manufactured onl by

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Zinc and Copper Ornaments.

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CATALOGUE ON APPLICATION.

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CUT AND WIRE STEEL NAILS.

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Slating and Roofing Nails, Slaters' Tools,

Copper Nails and Tacks.

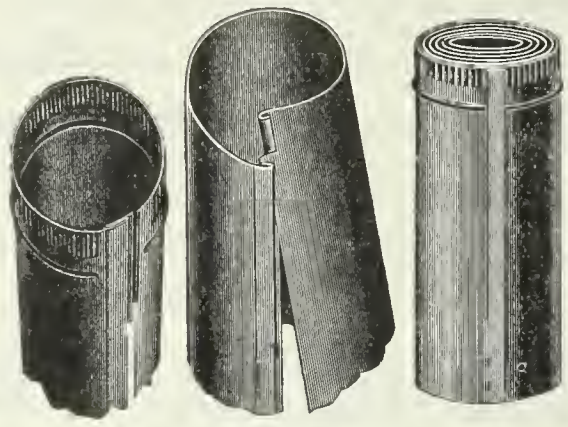
279 PEARL ST., NEW YORK.

DOVER PATENT NESTED STOVE PIPE.

NO TOOLS. (PATENTED SEPTEMBER 5, 1899.) NO MALLETING.

Ready to be put together when it leaves the Factory.

Corrugated Iron
Steel Roofing,
Eave Trough,
Conductor Pipe,
Stove Pipe,
Elbows,
Wire Hangers.



Guaranteed to be the most practical stove pipe on the market. Requires no tools to put it together and can be reshipped to your customer in original package, taking 4th class rate of freight (Northern Classification). 25 Joints shipped in wooden crate.

—MADE BY—

THE REEVES MANUFACTURING CO., - - Canal Dover, Ohio.

NO LONG "LINGO"

About Roman and Greek Styles, etc.

OUR CEILINGS ARE

VERY attractive.
VERY easily applied.
VERY cheap.
VERY much what you want.

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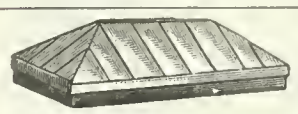
THE fact of the matter is, from an Architect's standpoint, a Cortright Metal Roof is an everlasting proof of his good judgment.
Cortright Metal Roofing Co.
50 N. 23rd St. Phila.
NONE BETTER



Skylights AND Ventilators

of every description for private or public buildings.

THE G. DROUVE CO., Bridgeport, Conn.

The CORNICE MAKERS' Opportunity.

H. COLLIER SMITH'S Patented All Metal WINDOW FRAMES AND SASHES.

CAN BE MADE IN ANY CORNICE SHOP.

Close and Lock Automatically. Adjustable in width. Glazed with Wire Glass, are ABSOLUTELY FIREPROOF. Endorsed by Fire Underwriters and supplant fire shutters wherever advocated. Will eclipse the skylight business.

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The advantage in using same is that they make an absolutely **WATER-TIGHT JOINT, PREVENT LEAKING** and **RUSTING** at the nail hole, thereby prolonging the life of a **ROOF.**

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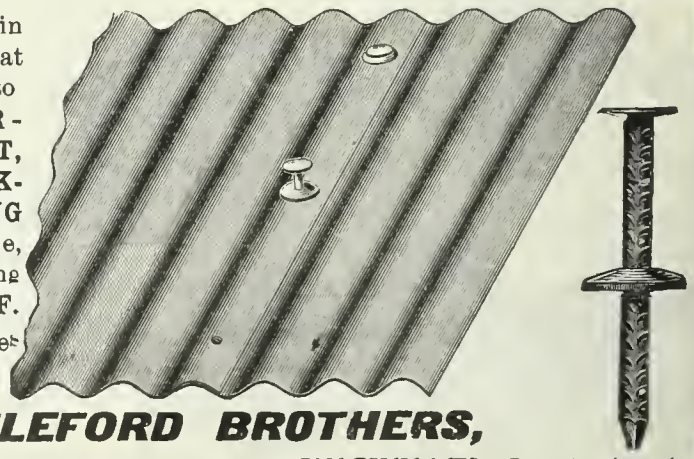

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IXXX	"	= 56	"
IXXXX	"	= 56	"

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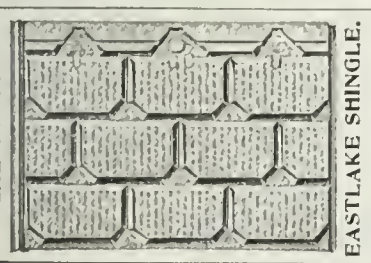

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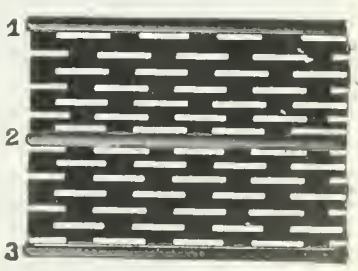

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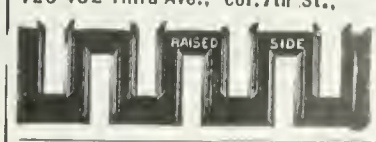

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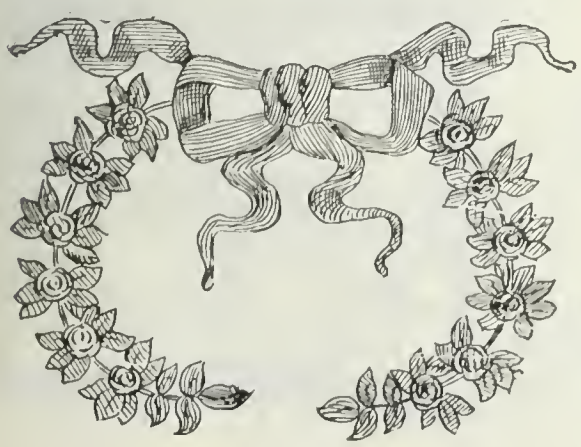

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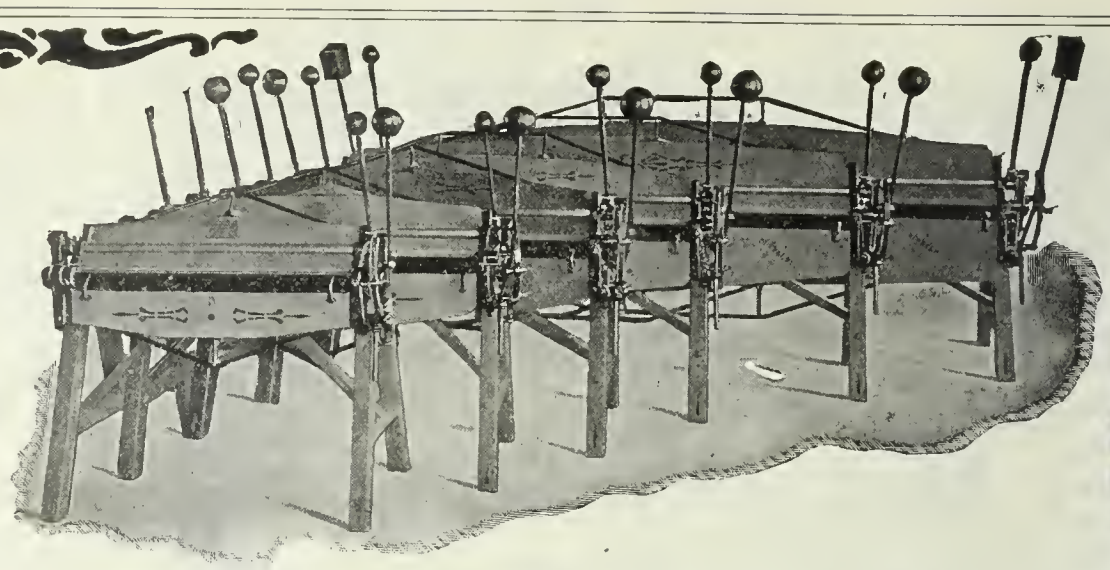

All the different sizes in which we make this practical machine are herewith illustrated.

This brake costs only half as much as an all-metal brake.

It is made mostly of hard maple.

It is just as good as an iron brake in every respect—much better in some ways. Beside the 50% saved in the first cost our brake will save money in its use.

It is light and can easily be carried from place to place.

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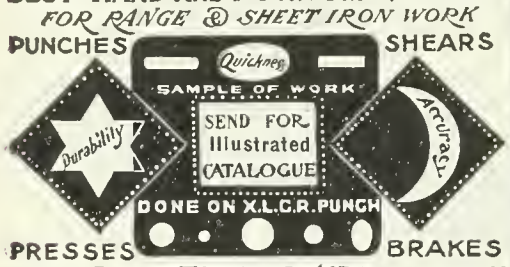

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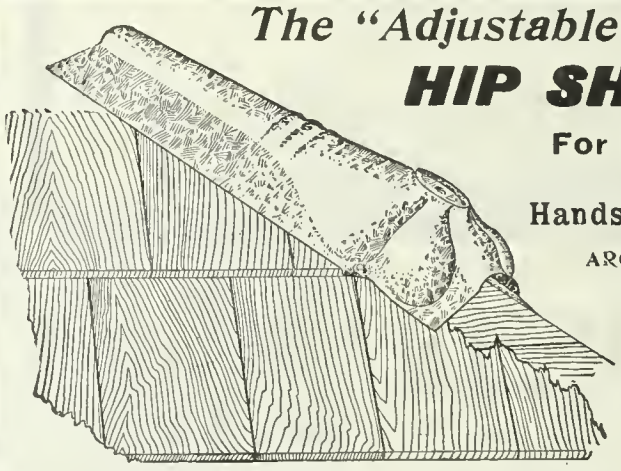

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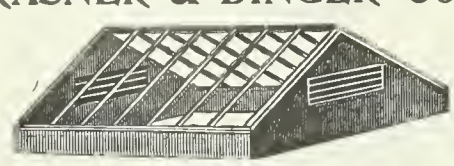

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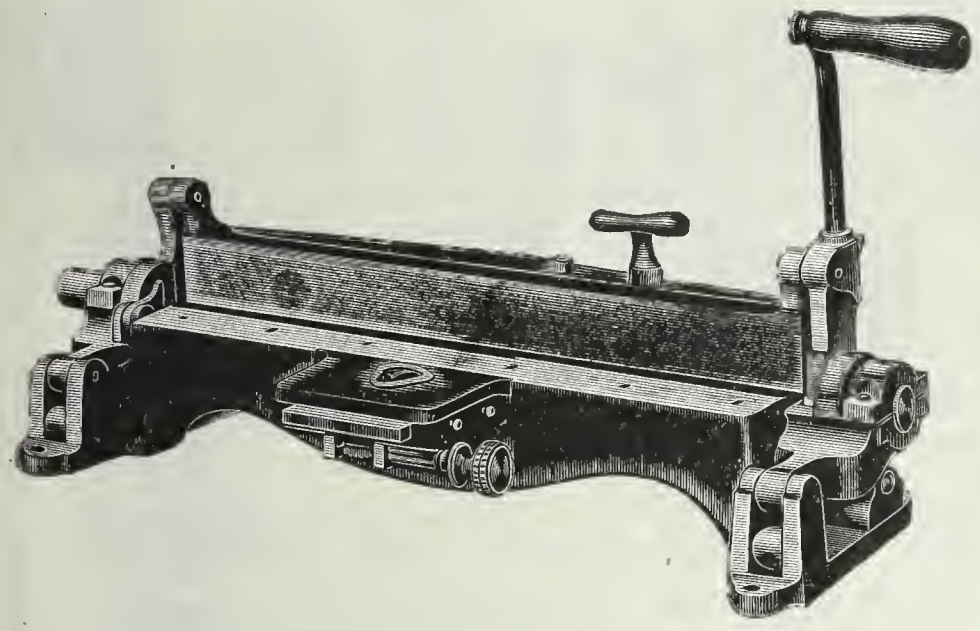

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Hundreds sold and never a complaint. Works easily and rapidly. The universal verdict is, IT IS THE BEST IN THE WORLD.

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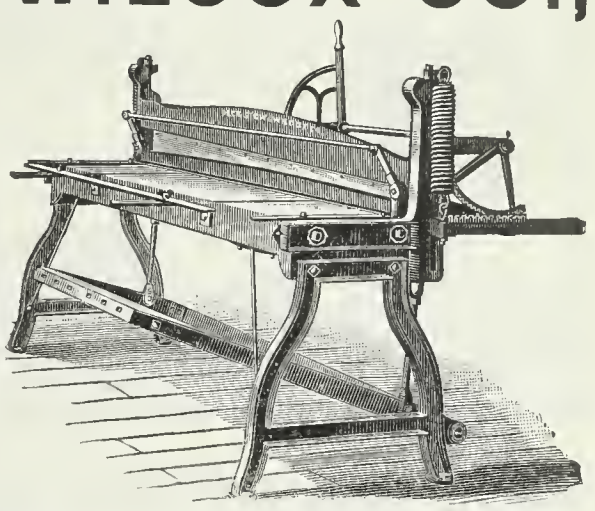

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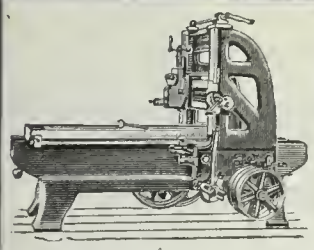

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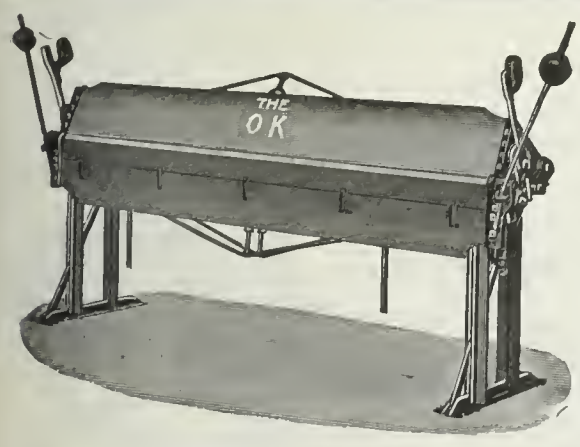

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Formers on cornice brakes included.

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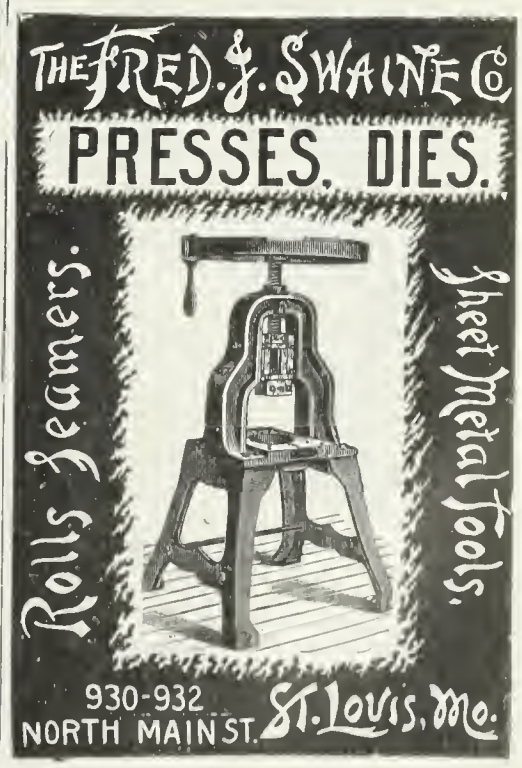

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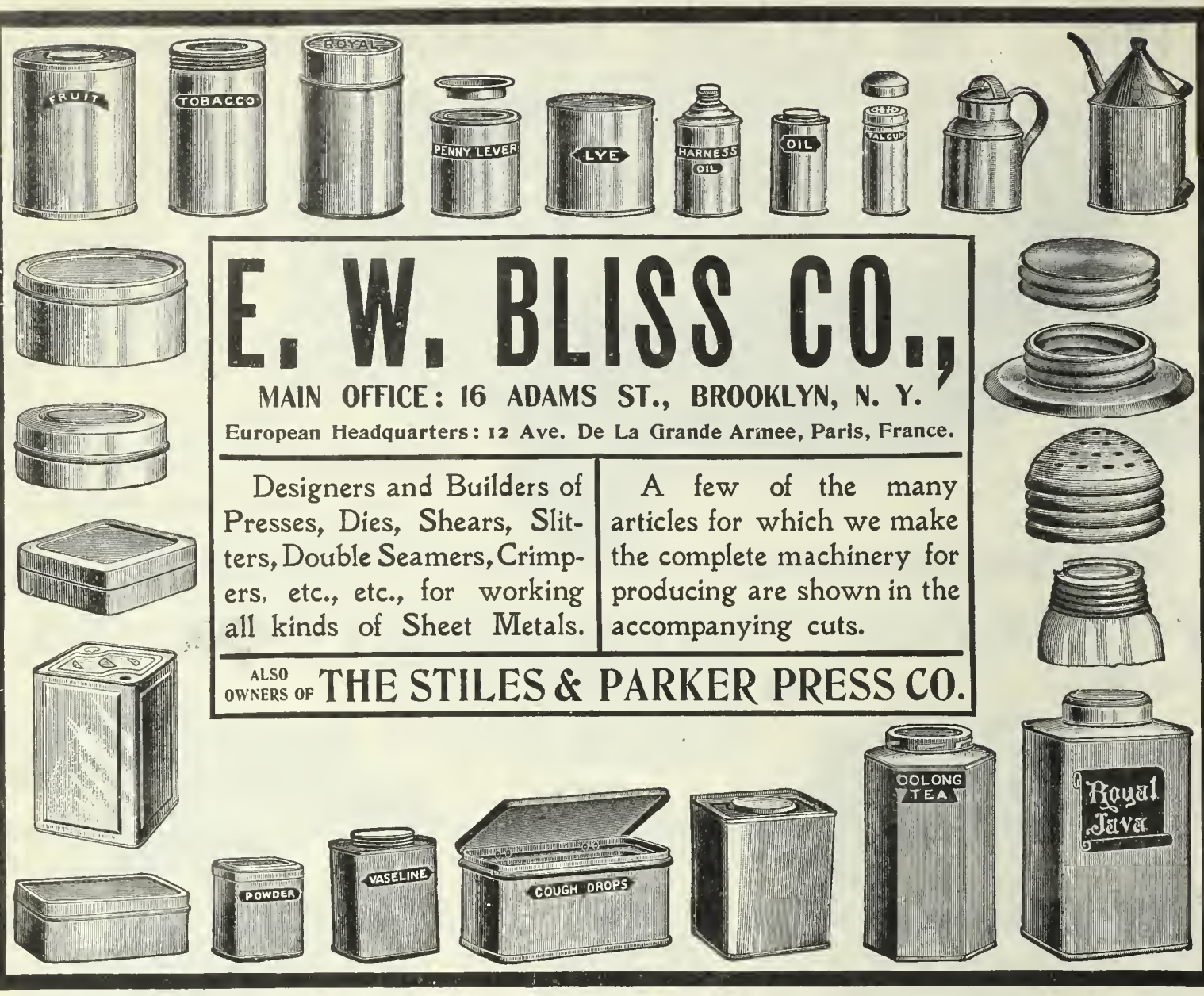

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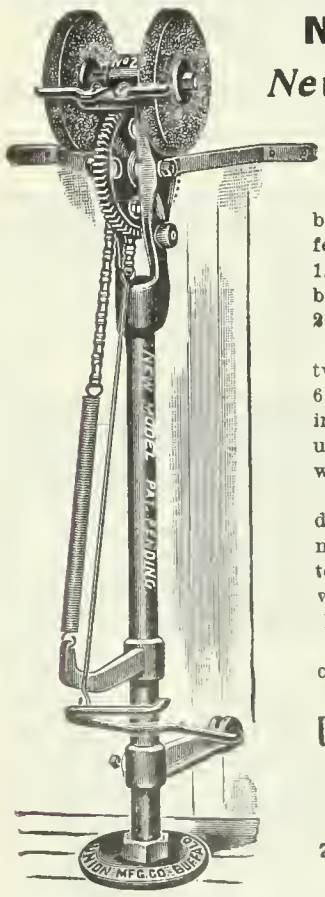

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Plumbers, stove dealers and repair men will find this tool a very good investment.

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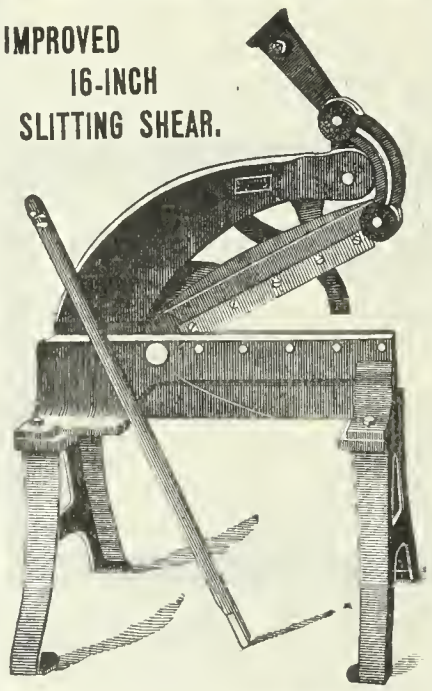

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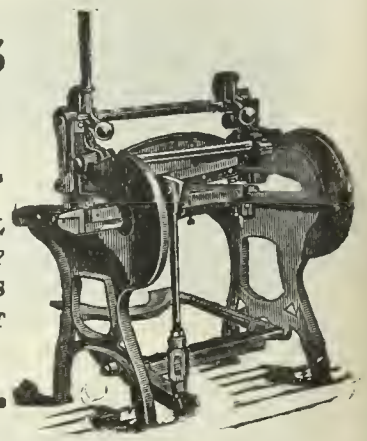

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Teacher: "What, is there only one? Well, William, you can tell the rest of the scholars the longest sentence you ever read."

Billy: "Imprisonment for life."—*Tit-Bits.*

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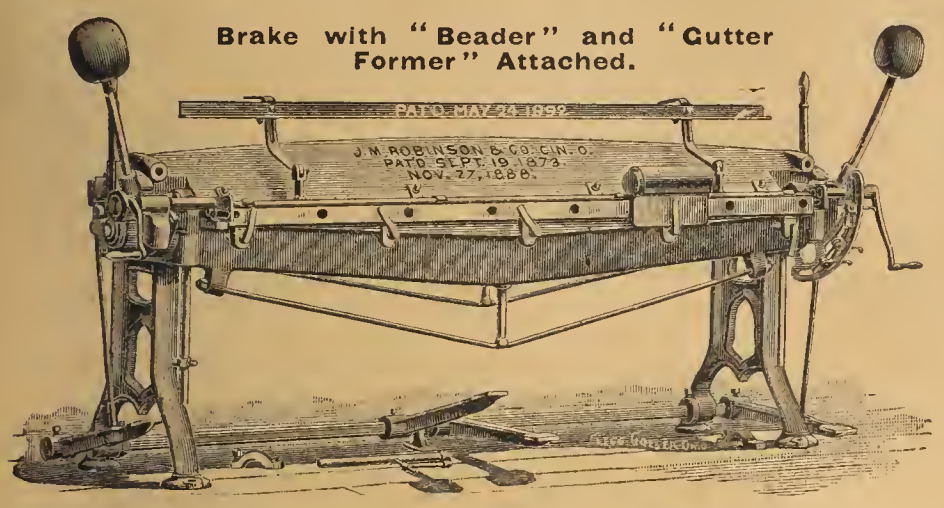


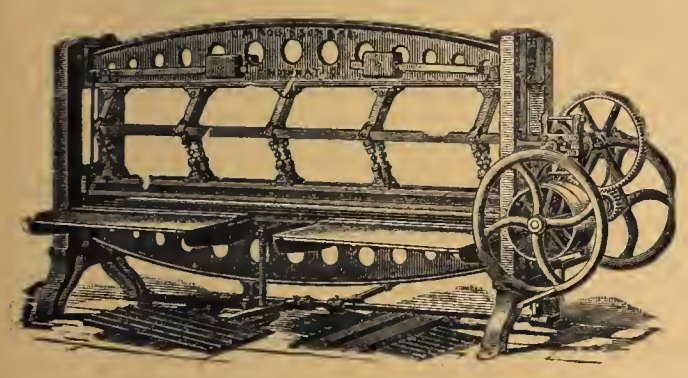
Brake with "Beader" and "Gutter Former" Attached.

With which to form Sheet Metal into Cornice Moldings, Ridge Caps, Skylight Bars; and with Beader and Gutter Former attached to Brake (price of which is extra), Bead and Form Gutters. Cornice manufacturers' Steel Straight Edges, 30-in. to 10 foot lengths.

Cornice Moldings, true and straight, are formed with ease and speed on the above illustrated 8 foot Cornice Brake, which Brake is made of cast and wrought iron and steel, many of which have stood the test of twenty-seven years and more, and are good for several years to come.

High Grade Cornice Brakes—try them and save your strength, time and money.

ROOFING AND BENDING MACHINE.



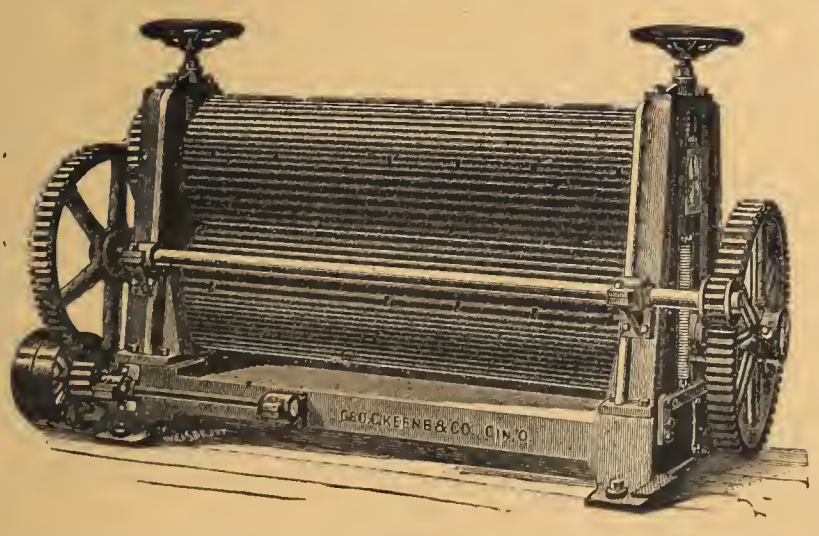
With Dies suitable will form Sheet Metal Roofing, Siding, Ceiling, Weather-Boarding, Skylight Bars, Metal Lathing, Gutters, Ridge Caps, Escalloped Steel Sheets and Cattle Troughs. Will bend and form No. 10 gauge and lighter in 6, 8, 10 and 12 foot lengths. Manufactured by

J. M. ROBINSON MFG. CO., CINCINNATI, OHIO.

BUILDERS OF SHEET METAL WORKING MACHINERY.

DOUBLE CORRUGATOR,

8 AND 10 FOOT.



The equipment of Iron Roofing Establishments a specialty.

Geo. C. Keene & Co.,

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Makers of the KEENE CORNICE BRAKE.

IMPROVED
Patent Automatic Can Body Double Lock Seaming Machines.

COMBINATION
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SEAMLESS BRASS AND COPPER TUBING.

All sizes from 1-8 in. to 9 in. diameter.

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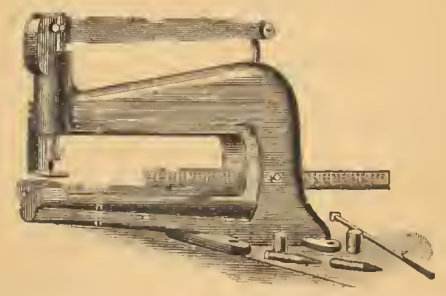
We carry in stock a general line of Brass and Copper in Sheets, Rolls, Rods, Wire, Rivets, Nails, &c.

Our large and well-assorted stock (aggregating over 1,000,000 lbs.) enables us to fill orders promptly.



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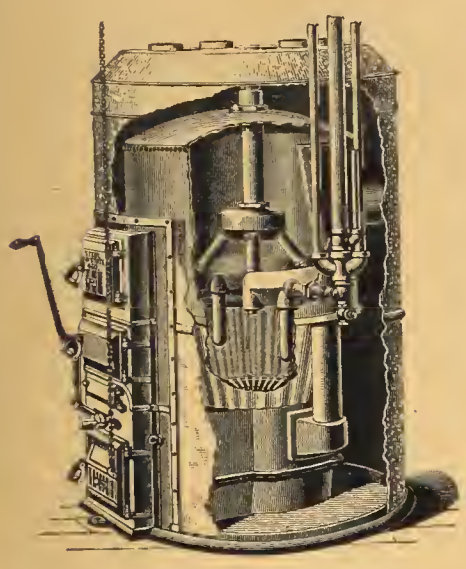
For Sheet Metal Work. Punches to center of 36 in. sheet or 5 in. pipe, 30 in long. Handiest Press made. Dies and Punches furnished with every Press. Weight about 175 lbs. For Descriptive Circular and Price, address

R. M. CLOUGH, Tolland, Conn.

—He (telling a hairbreadth adventure): "And in the bright moonlight we could see the dark muzzles of the wolves."

She (breathlessly): "Oh, how glad you must have been that they had the muzzles on!"—*Ex.*

An Ideal Warming



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apparatus provides for the introduction and distribution of fresh warm air and can be secured by using a

BAY STATE COMBINATION HEATER.

Manufactured Only by

BARSTOW STOVE COMPANY,

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TO LIGHT A CHURCH

Or any room pleasantly, economically and effectively is not a simple matter. Mistakes occur where least expected. I have made such lighting a specialty for over forty years. Send for estimates.

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"UTICA PIPE IS THE BEST." Cast Iron Soil Pipe. Cast Iron Water Pipe. Plumbers' Supplies and Lead Pipe.
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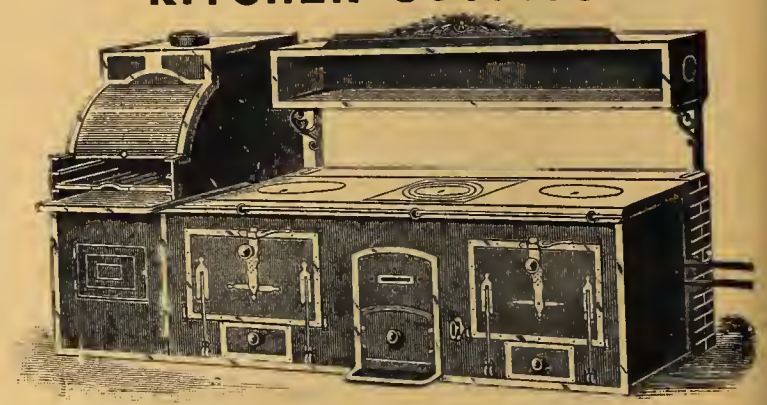

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A Popular Heater.

The Glenwood Hot Water Heater is unanimously approved and praised by dealers in heating goods because of new and practical improvements, especially **the one piece construction** which is acknowledged a great talking point over other boilers which are made in sections and sooner or later burn out and leak at the joints. Write for catalogue.

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INCREASING DEMAND TELLS THE STORY . . .

McCLURE'S GENUINE CHARCOAL IRON REDIPPED ROOFING TIN

McCLURE & CO.

Manufacturers of Tin Plate,

PITTSBURGH, PA. 211, 213 and 215 Second Ave.
PHILADELPHIA, PA. 115 North 7th Street.

Index to Reading Matter, Page 60.

Index to Advertisements, Pages 62 - 64.

The Metal Worker

A WEEKLY JOURNAL OF THE ROOFING, CORNICE, STOVE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

VOL. LVI. NUMBER 7.

NEW YORK AND CHICAGO, AUGUST 17, 1901.

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Albany, N. Y.
Fire Brick Stove Linings
HIGH GRADE. LOW PRICE.
Also **Plastic Iron Stone Stove Lining**
In Bags or Barrels. Send for Prices.

The Gorton Side Feed Boilers
FOR STEAM AND HOT WATER HEATING.
INVESTIGATE FOR YOURSELF.
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S. CHENEY & SON,
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A range that will respond quickly to the fire is a very important article, early in the morning and at other times. The dependable sheet flue system of the Excelsior Range makes it respond quickly to the fire and there is no delay with breakfast. We do not guess at making these goods. The essence of 40 years' experience goes into every one.

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Large workers in galvanized iron use two makes: Apollo for fine; another for rough.

Mistake. Apollo is best for rough work too.

American Sheet Steel Company
Battery Park Building
New York

WHAT MAKES
The Stewart Oak
So popular among the dealers? Because it is a lively seller and brings good profits. It stays sold and nobody kicks at it except the coal man.
FULLER & WARREN CO., Troy, N. Y.

THE DIGHTON FURNACE Page 23.

CROSBY SPRING-SEAT
GLOBE and ANGLE VALVES, IRON and BRASS.
All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.
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Jenkins Bros.' Valves
are manufactured of the best steam metal, and are fully guaranteed. Why experiment with cheap valves? If you want the ***BEST*** ask your dealer for valves manufactured by Jenkins Brothers. Remember all genuine are stamped with Trade Mark like cut.
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Roofing Tin Plates: the best imported, Follansbee Bros. Co.'s Pure Iron Old Style; the best American, Scott's Extra Coated.

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Steam Specialties.
RELIEF and NOISELESS BACK
REVATOR VALVES, PRESSURE VALVES,
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DUCING VALVES, ARATORS.
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READ OUR "AD"
Page 21.
MAGEE FURNACE CO.,
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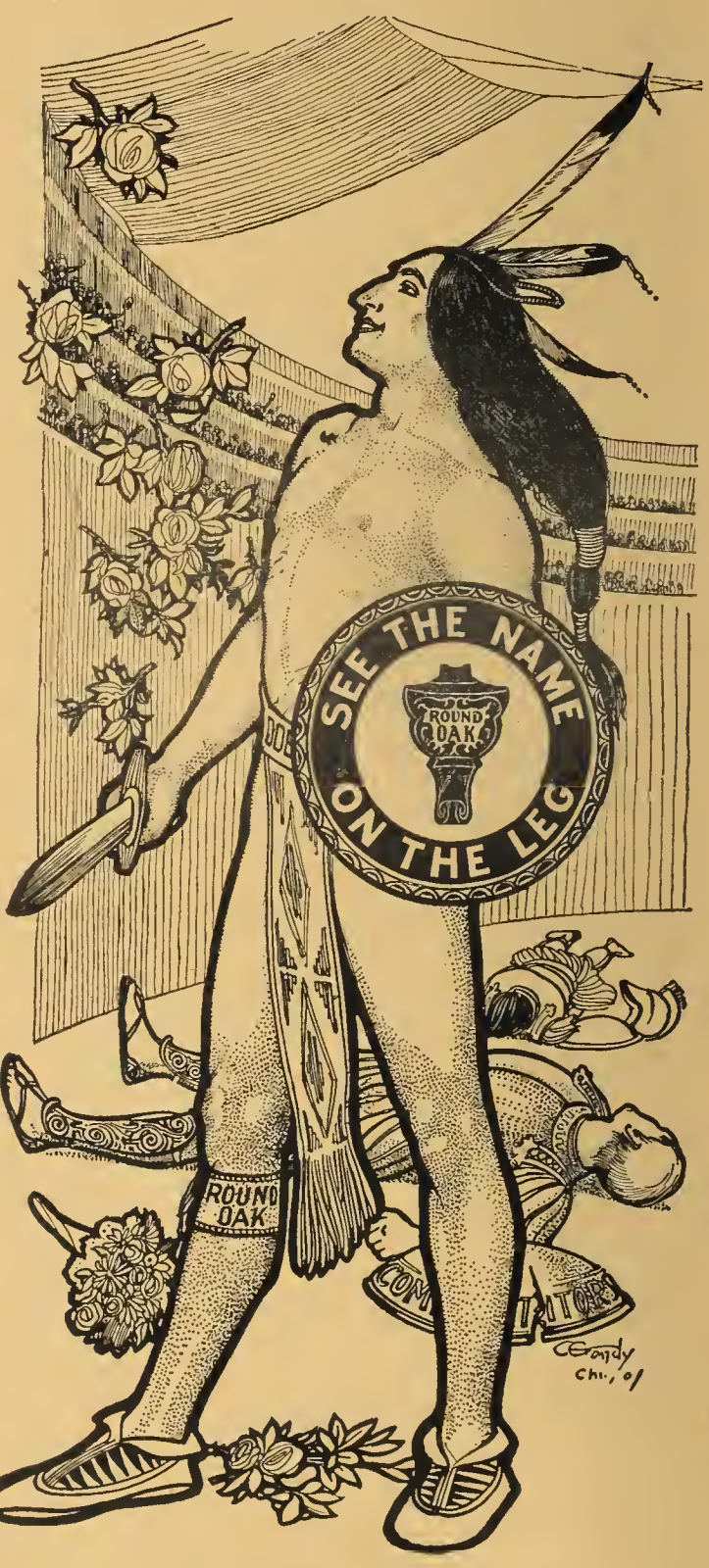
Standard of America

Still Leading in Popularity



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Round Oak,
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Michigan,

Is Still Leading in Popularity

and SALES.
Perhaps
it is not sold
in your town.
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The Best
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to be had.
If so,
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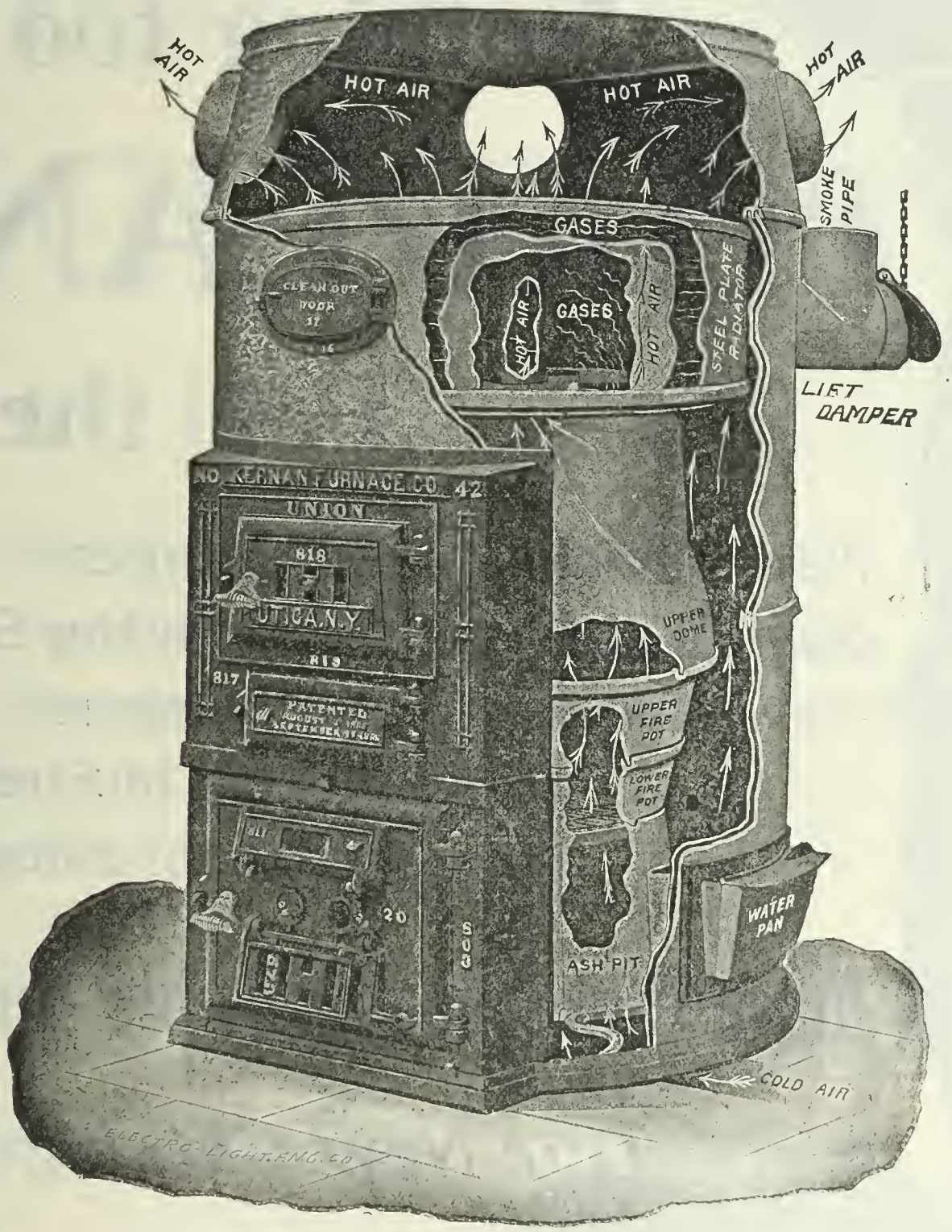

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Nothing too

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New Models of Steel Ranges.
New Models of Steel Cooking Stoves.
New Models of Base Burners.
New Models of Sheet Iron
New Models of Sheet Iron H

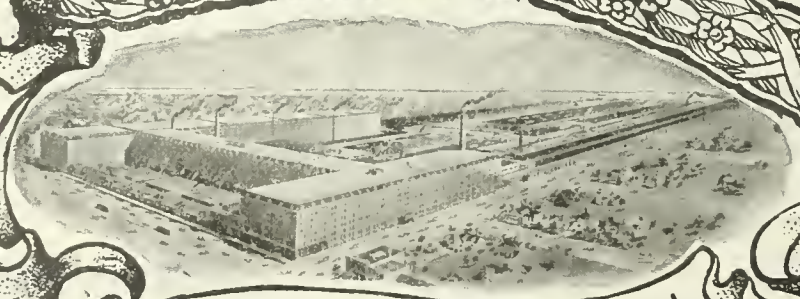
More New and Desirable Patterns

Our New Catalogue is y

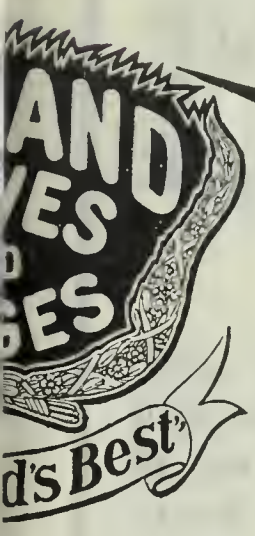
The Michigan S

Largest makers of Stove

DETROIT. CH



WORKS AT DETROIT, MICHIGAN.



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New Models of Cast Ranges.
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BOYNTON'S "RENOWN"

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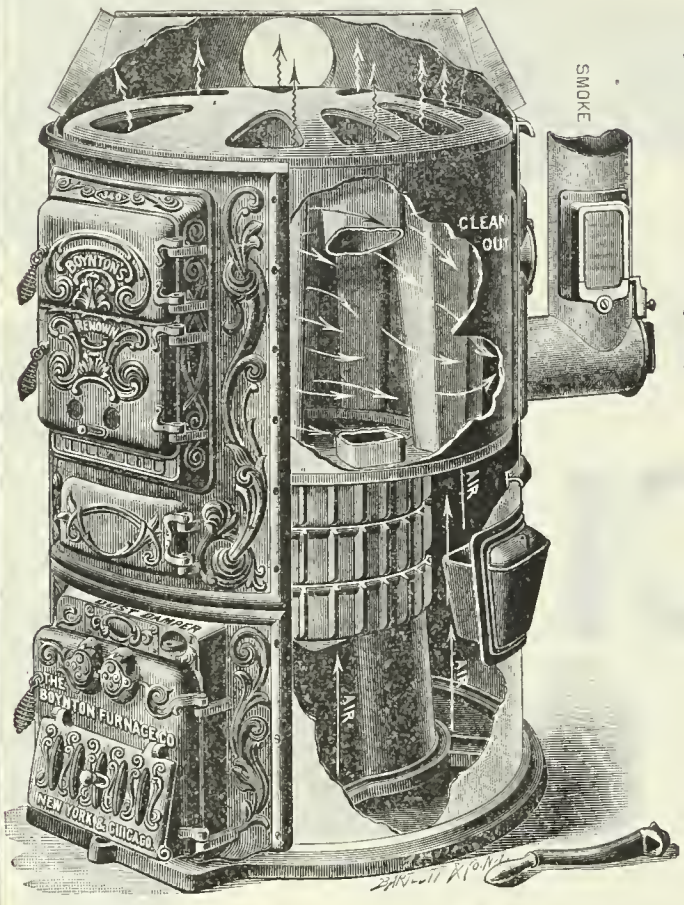

A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**

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WROUGHT STEEL

RANGES

LIKE THE

"PACIFIC"

Are best because they're made stronger, better, more perfect than any other similar construction. You should write for prices and secure our Catalogue.

It is made with High Closet, Rolling Front, Six Holes, for Hard or Soft Coal; is the latest, best and handsomest Steel Range ever offered, one that you can offer as simply "out of sight" compared with that sold by the peddlers. Try it.

...THE...

JOHN VAN RANGE CO.,

Warerooms:—419 ELM ST.,

Factories:—6-8-10 and 12 HOME ST.,

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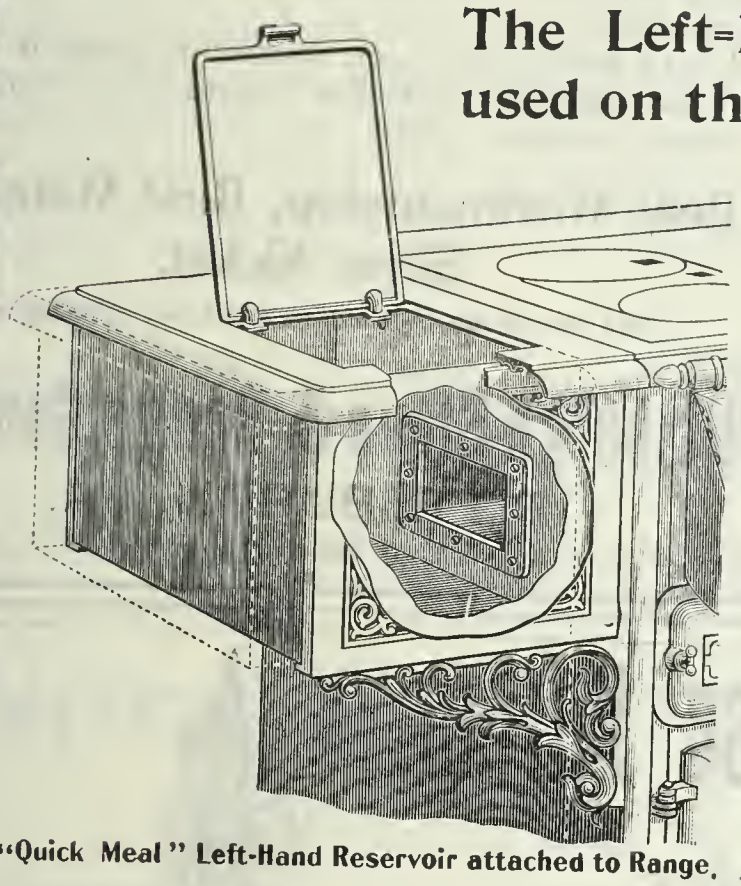
QUICK MEAL

STEEL RANGE RESERVOIR

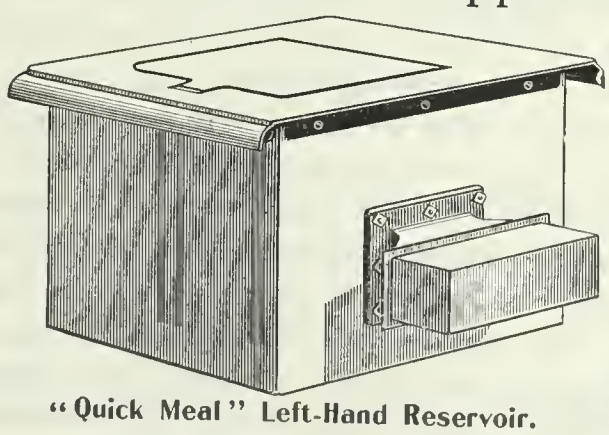


"Quick Meal" Left-Hand Reservoir attached to Range.

The Left-hand Reservoir used on the "Quick Meal" Steel Range

has proved itself to be satisfactory and has attracted customers everywhere; it is so simple that it needs no explanation how to app eciate. There are no dampers to interfere with the working of the Range No sweat or steam draining down the sides to rust out the body or mar the appearance of the Range.

The Left-Hand Quick Meal Reservoir can be used on all Quick Meal Ranges except those with Pouch Feed.



"Quick Meal" Left-Hand Reservoir. Showing Heating Pocket.

Quick Meal Pouch Feed Ranges have a Right Hand Reservoir made on the same principle.

RINGEN STOVE Co. SAINT LOUIS

MONARCH CINDERELLA

FOR HARD COAL.

In the Monarch Cinderella will be found one of the most perfect high grade, medium priced, base burning double heaters offered to the trade.

Every modern and desirable improvement is embodied in its construction. We believe the careful buyer will acknowledge that there is not a better stove in its class.

Every point has been studied to make it the best; and for ingenious, effective simplicity in construction it stands without a peer.

Best Workmanship, Best Materials, Silver Nickel.

We would be pleased to send our catalogues.

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PITTSBURGH, PA.

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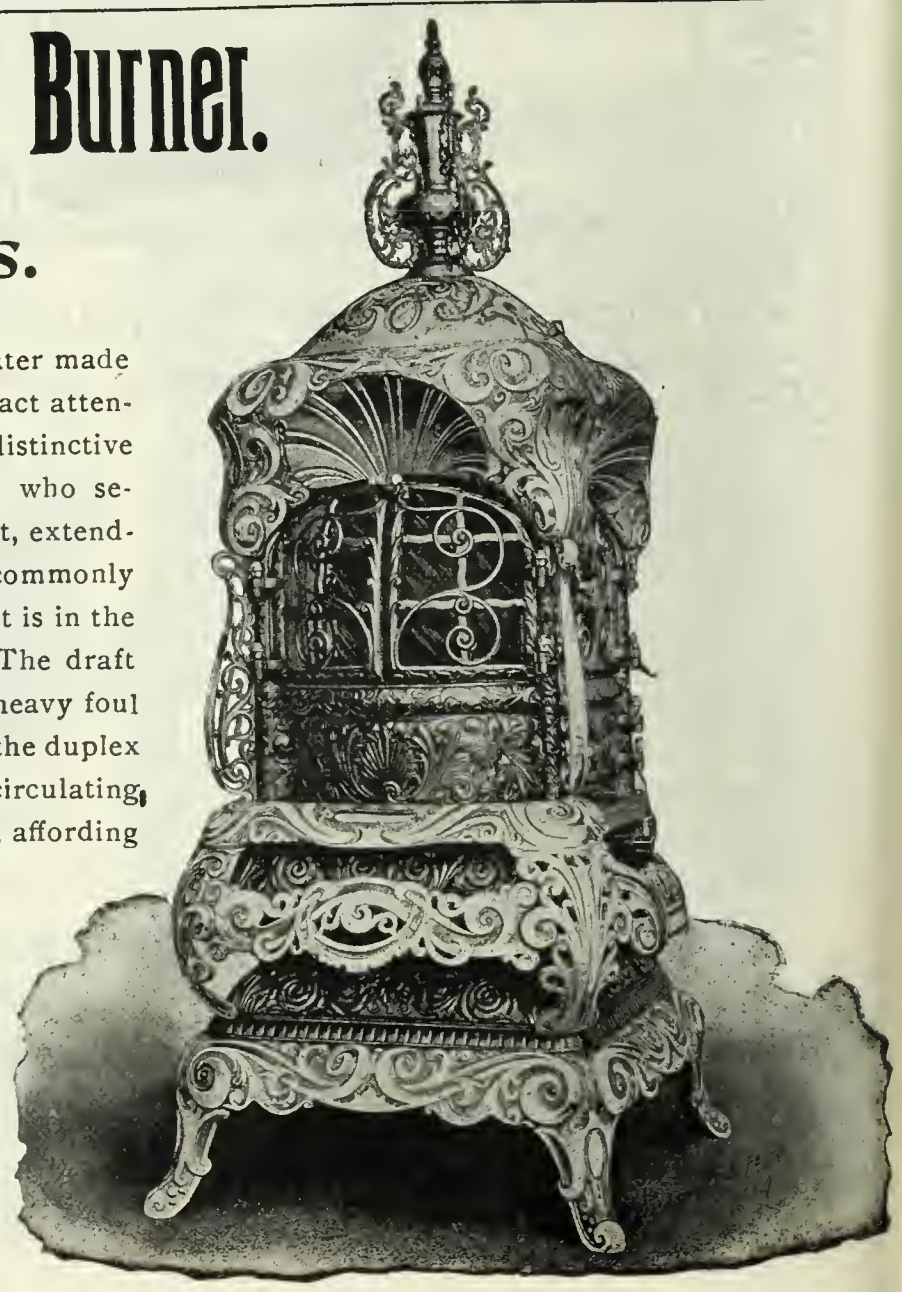
The Monitor Base Burner.

High Art Series.

It is without doubt the most powerful heater made and its rich and graceful appearance will attract attention at once. The novel construction and distinctive features offer every advantage to the dealer who secures the agency. The diving flue is in front, extending entire width of stove, being what is commonly known as a sheet flue, thus the greatest heat is in the front of the stove where it is most needed. The draft is taken in through the bottom, carrying the heavy foul air which settles near the floor. Grate is of the duplex pattern with outer shaking ring. Two large circulating flues are fitted in rear corners of the stove, affording ample circulation for heating evenly the largest room. Send for new Catalog and secure the agency without delay.



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CRAWFORD OAK

The latest and most stylish. It will outsell all others in your town. The firepot is extra deep and nearly straight; keeps fire well. Triangular or draw-centre grates. Corrugated perforated disc for wood burning.

The ashpit is so deep that the grates are durable; there is an ashpan, a real ashpan, four and a half inches deep.

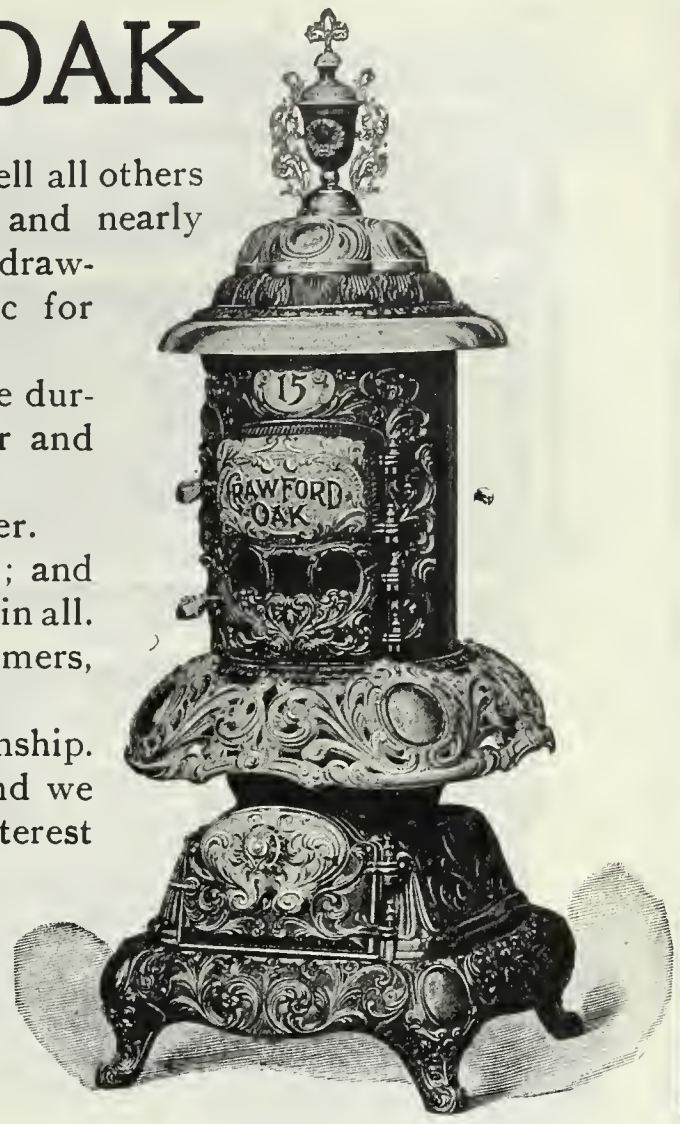
Smoke collars at top and back; use either.

Three diameters of body, 13, 15, 18 inch; and the 18 inch is also made extra high; four sizes in all.

Handsome circulars to give your customers, and show posters for your store.

The best grade of New England workmanship.

Write us if you can handle this Oak, and we will send full description and will try to interest you as to prices.



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Finest Stove Foundry in the World

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"Norman" Steel Range.

BUILT LIKE A WATCH.

ATTRACTIVE.

ECONOMICAL.

DURABLE.

In the "NORMAN" Range are embodied up-to-date features that sell stoves.

The Fire Box is Oval in Shape and of Goodly Dimensions.

Either Duplex or Dockash Grates can be used. Grates removable through end door without removing any fire box linings.

Send for Illustrated Catalogue descriptive of our full line of Steel and Cast Ranges and Heaters.

GALUSHA STOVE CO., Makers, - ROCHESTER, N. Y.

Red Cross

Combination Ranges.

GAS, COAL AND WOOD.

The Victor

Planished Steel Range

WITH THREE BURNER GAS ATTACHMENT.

The Princess

Planished Steel Range . . .

WITH GAS OVEN AND BROILER COMPLETE, AND THREE BURNER ATTACHMENT.

Manufactured by

Co=Operative Foundry Co.,

Rochester, N. Y.

Western Agency,
J. P. LINDEMANN & SONS,
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Model Steel Range

For Hard Coal, Soft Coal or Wood.

They are **Models** of all the good things, useful and beautiful, that can be embodied in a modern range. Their popularity, on account of their many good points, has led many imitators to copy them as near as they dare, but as the oven doors, dampers, fire-box and other features are covered by patents, the imitations are still behind in the race, so far as construction and operation are concerned, and we feel confident that a comparison will result in a most favorable impression as to our claim that they are **Models of Beauty** and just the one range above all others that it will pay the dealer to handle. The large and constantly growing trade we enjoy on the **Model Steel Range** has been built up purely on its merits and not through a lot of extravagant "fake" advertising.

Write for prices and discounts.

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MORLEY BROS., Saginaw, Michigan, Agents for Northwest.

THE BUSIEST MAKERS OF STOVES & RANGES IN THE WORLD

BRIGHTON AIR-TIGHT HOT BLAST.

Patent Applied for.

SOMETHING NEW!

THIS is not an every day "Air Tight Stove" that almost every stove foundry makes. While the general construction is the same, the principle is different.

This stove is furnished with a blow pipe fastened to inside of feed door and extends inside to the center of fire pot and is controlled by a screw register on outside of feed door.

DIRECTIONS FOR USING:

Close up all openings below feed door and regulate your fire entirely by screw register in the feed door.

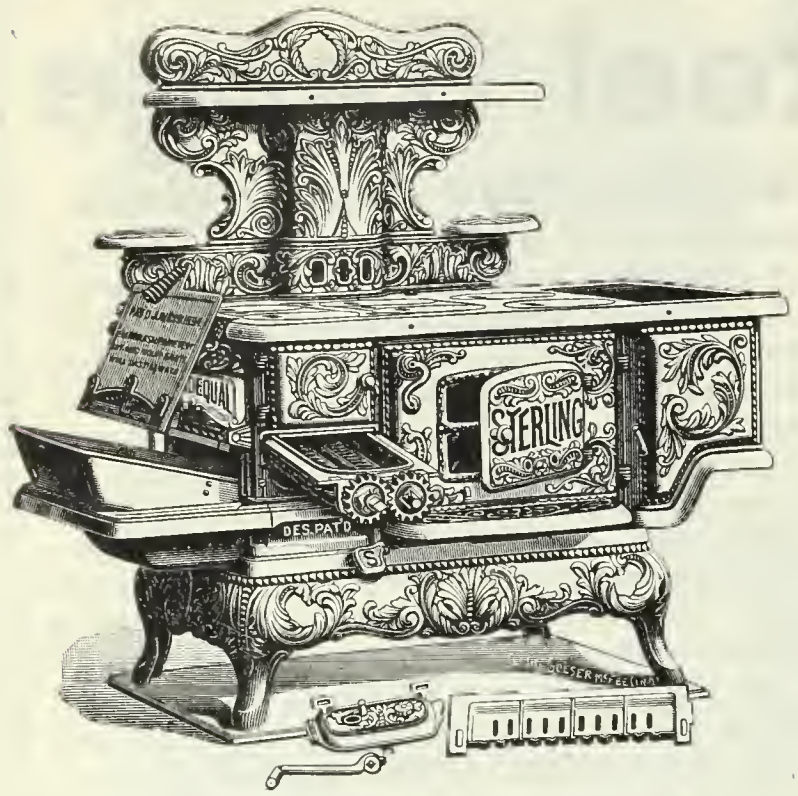
By following these instructions you will produce more heat with this stove and consume less fuel than with any other stove made.

WRITE FOR PRICES AND SECURE THE AGENCY FOR THE BEST LINE ON EARTH.

JOHN A. SCHULTE & CO., Cincinnati, O., U. S. A.

Manufacturers of

Steel Ranges, Cast Ranges, Oak Stoves, Etc.



STERLING RANGE.
"Has No Equal."

WHY IS

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Range

"Has n

BECAUSE we are constan
BECAUSE we use the bes
BECAUSE every stove i
before leaving the sh
BECAUSE in them are to
patented and exclusiv
found in any other
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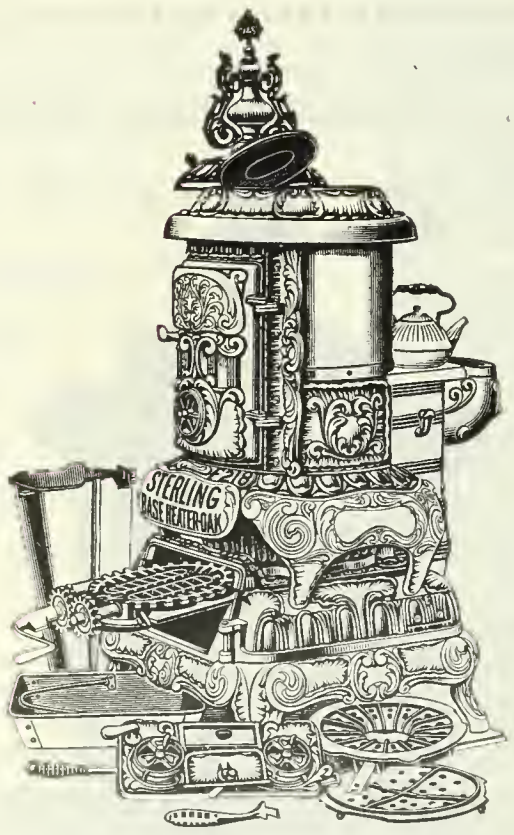

BASE HEATER OAK.

PRICE LIST, with terms and discounts, now ready.

SILL STOVE WORKS,

BOSTON, 44 Hanover Street.

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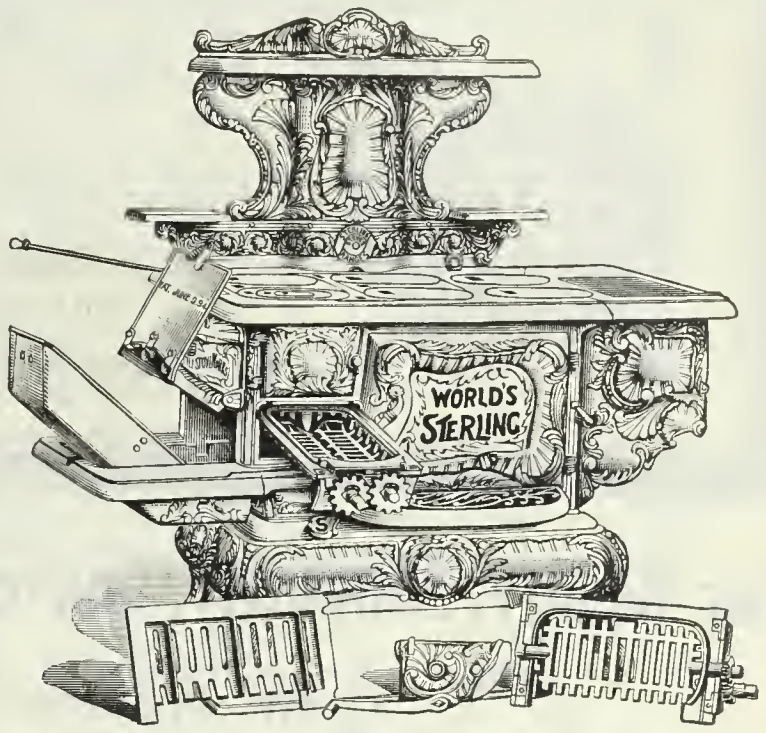
Equal."



WORLD'S STERLING.

getting out something NEW.
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controlled by us, than can be
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customers know, that every
has been fulfilled.
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can equal them either in re-
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THE STERLING.

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Makers, ROCHESTER, N. Y.

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GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

For Beauty, Simplicity, Convenience and Heating Power,

The Improved....

"NEW PROCESS'

AND

"IMPROVED" Standard OIL HEATERS

Excel all others.

You must order early if you expect to get heaters this year. Our jobbers have them.

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THE MOST COMPLETE LINE FOR ALL GASES
BURRELL & FOWLER - CLEV'D O.

JEWEL STOVES AND RANGES.

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DETROIT STOVE WORKS
LARGEST STOVE PLANT IN THE WORLD

A Complete, Well Advertised Line; Low Prices and Good Workmanship.

Please Write for Catalogue.

DETROIT STOVE WORKS.

Detroit - Chicago.

AIR TIGHT HEATERS.

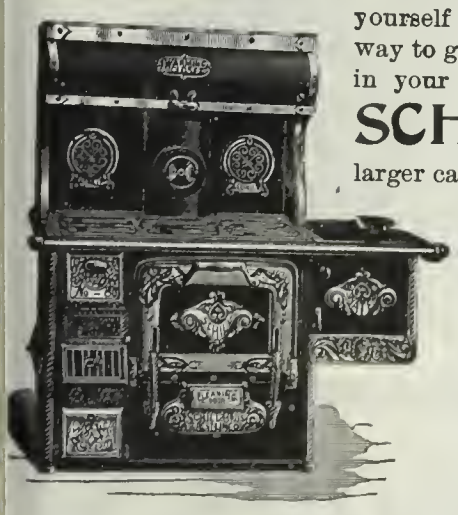
Our line in these comprises everything from the cheapest to the very finest finish possible to produce. Our mannfacturing facilities and daily output justify us naming prices below any possible competition. This fact has enabled us to establish Wholesale Agencies in nearly every large city in the United States and makes it possible for ns to supply the Dealer "Near His Door," saving time and freight. We also manufacture **Steel Ranges, Steel Cooks, Cast Ranges and Cooks, Hot Blast Coal Heaters, Oaks, Laundry Stoves, Radiators, etc.**, all up-to-date goods.

Write ns for particulars and we will pnt you in the way of making some money.

EXCELSIOR STOVE & MFG. CO., - Quincy, Ills.

DON'T

handicap yourself in the stern competitive struggle after business by handling an inferior range or furnace. Yon can't afford to pursue such a course or you will find yourself in the rear division of the procession. The way to get to the front in the fnrnace and range trade in your town is to handle recognized leaders like **SCHILL FURNACES** and **RANGES.** The company making these ranges has a larger capitalization and greater facilities than ever before, and these goods are to be even more widely known in the future than they have been in the past.



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CRESTLINE, O.

Gurney

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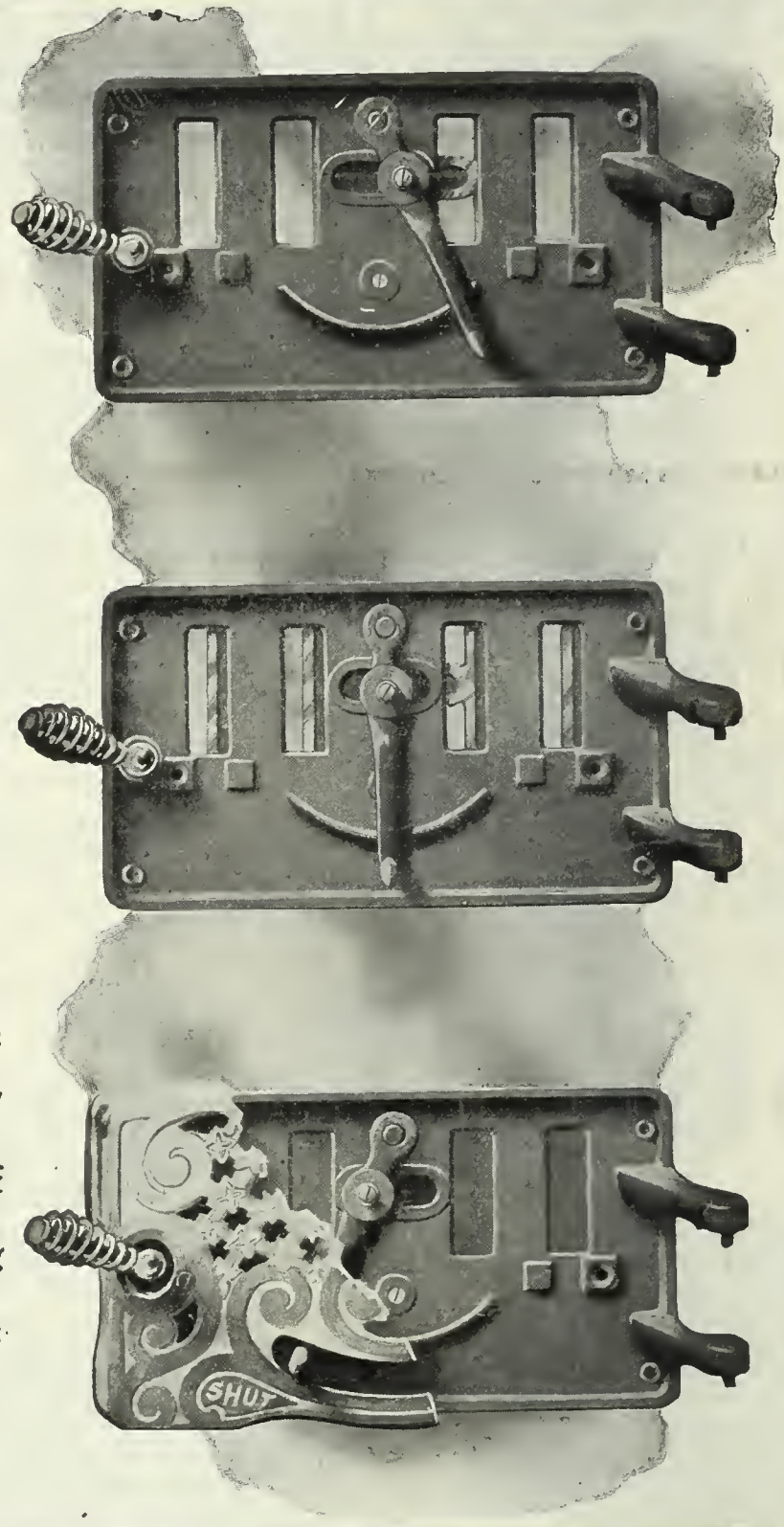
Moore's Air-Tight Heater

M TRADE MARK

The Air-Tightness of an Air-Tight Stove Consists in Its Being Air-Tight



The above simple fact is frequently lost sight of in the meaningless use of the word air-tight, loosely applied to many stoves regardless of the fit-ness of their joints. Much of the secret of the success of MOORE'S AIR-TIGHT HEATER lies in the perfection of the base door, all the joints being mechanically ground to within $\frac{1}{1000}$ of an inch of actual contact.

JOLIET STOVE WORKS

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Champion and Marquart

Double Flue Ranges.

Only Double Flue Ranges in the Market. The Greatest Fuel Saver. Draw-Out Grate.

Handsomely Finished Throughout. Prices Within Reach of all.

CHAMPION STEEL RANGE CO.,

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We are represented by the following houses:

Lee-Glass-Andreesen Hdw. Co., Omaha, Neb.
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OUR LATEST PRODUCTION.

BAKES EVENLY BY THE CIRCULATION OF HOT AIR.

FOR BAKERS, CONFECTIONERS, HOTELS,

Also the best oven for Core Baking, Japanning, Enameling, etc

Made in six sizes, single and double, for coal, wood, natural or artificial gas.

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An Undisputed Fact

THAT . . . .

The Peach Oil Heater

has proven beyond all doubts

An Absolute Success As a Powerful Heater.

Economical, Durable and Ornamental,

and at a PRICE that brings it within the reach of every Household.

For further information address

THE DANGLER STOVE & MFG. CO.,

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Furnace Heating.

A Practical and Comprehensive Treatise on Warming Buildings with Hot Air, by William G. Snow, with an Appendix on Furnace Fittings. 170 pages; size, 6 x 9 inches. Cloth bound. Price, **$1.50.**

This is the only book that has been brought out which presents a systematic and reliable treatment of the warm air furnace system of heating.

It deals with the various types of furnaces, their construction, proper location and setting, together with furnace fittings, and all matters pertaining to the installation of furnaces and to effective and economical heating by warm air. The subject is discussed for the first time by a competent author possessed of a scientific education and a practical training, who presents positive rules, based on a long experience, for guidance in designing furnace systems for dwellings and other buildings where this popular method is employed. The various details of furnace work are described simply and at such length that the volume will be valuable to all who are in any way interested in the subject. It is recommended to practical furnacemen, to architects, builders and house owners, and to tinners and plumbers in suburban sections who do furnace work. To all these it will prove a reliable text-book and guide.

PARTIAL SUMMARY OF CONTENTS BY CHAPTERS.

Chapter I.—Furnaces—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

Chapter II.—House Heating—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

Chapter IV.—Air—Deals with the Necessity of Ventilation—Water Needed to Moisten Air—Expansion of Air—Velocity of Air in Tubes, etc.

Chapter V.—Heating and Ventilation of Buildings—Considers the Size of Furnaces Required—Fresh Air Room and Supply—Air Circulation—Size of Flues—Use of Stack Heaters—Size of Heating Coils in Vent Flues, etc.

Chapter VI.—Heating of Public Buildings, Churches and Stores—Is given to the Size of Furnaces Required—Grate Surface in Ventilated Buildings—Air Supply—Size of Heating and Ventilating Flues—Size of Stack Heater, etc.

Chapter VII.—Fan-Furnace Combination System—Is devoted to Positive Warm Currents from Fan Systems—Location of Fan and Driving Apparatus—How Good Furnaces are Aided by Fans—Types and Efficiency of Fans—Area of Ducts and Flues, etc.

Chapter VIII.—Temperature Control.

Chapter IX.—Estimate and Contract Blanks.

Chapter X.—Value of Fuels. The Proper Size for Furnace Chimneys—with tables.

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Furnace Fittings.—A section of 45 pages dealing with the Making of Furnace Casings—Metal Cold Air Boxes—Making Furnace Bonnets and Collars—Making Pipe and Elbows—Register Boxes and Stack Shoes, etc.

Sent postpaid on receipt of price, $1.50.

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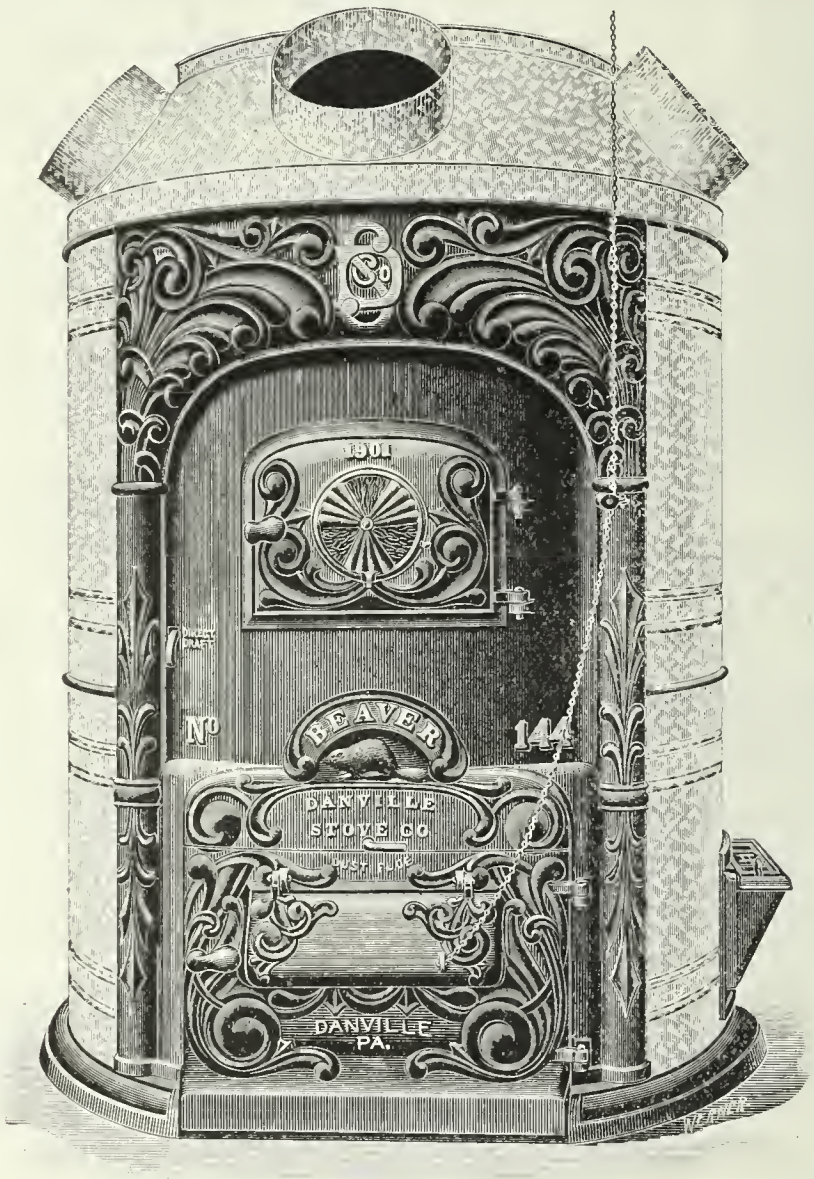
NOT REMODELED BUT REDRESSED.



A furnace adapted for all kinds of fuel. It has stood the test of many winters, steadily gaining in circulation wherever sold.

The sectional fire pot, with deep cup joints, heavy castings, and patent revolving grate, with large ash pit, are features that commend the Beaver everywhere.

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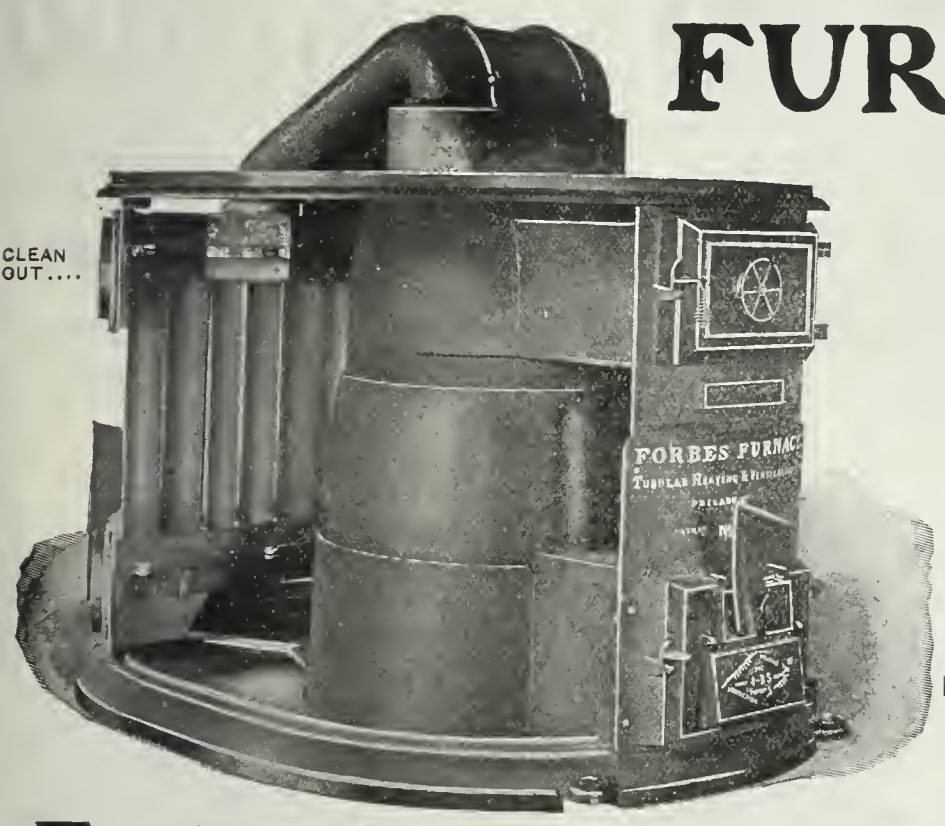

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Compact and Simple Construction.

Aluminum Tubes

IN RADIATOR
ARE RUST PROOF.

Triplex Grate.

PERFECT SHAKING. PERFECT DUMPING.

Each Bar can be separately replaced.

Forbes Furnaces

Save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

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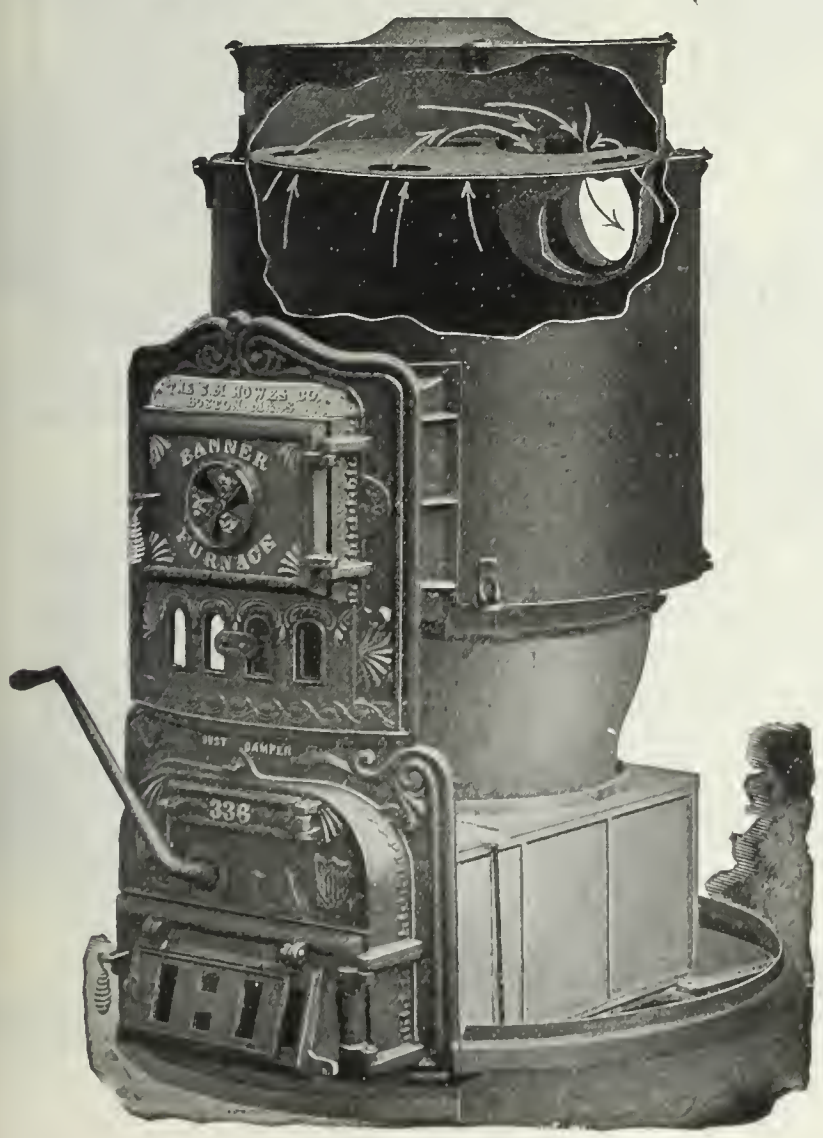

Deeper Ash Pit
Solid Front Shield
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The original Banner Furnace has been universally acknowledged to be unexcelled as a heater. Banner Furnaces have been on the market eight years and have proven themselves strong and durable.

Time Tested

Modern Construction and Durable
Of Great Capacity
Very Low in Price

PUT A SAMPLE ON YOUR FLOOR

They are as Salable as Heating Stoves

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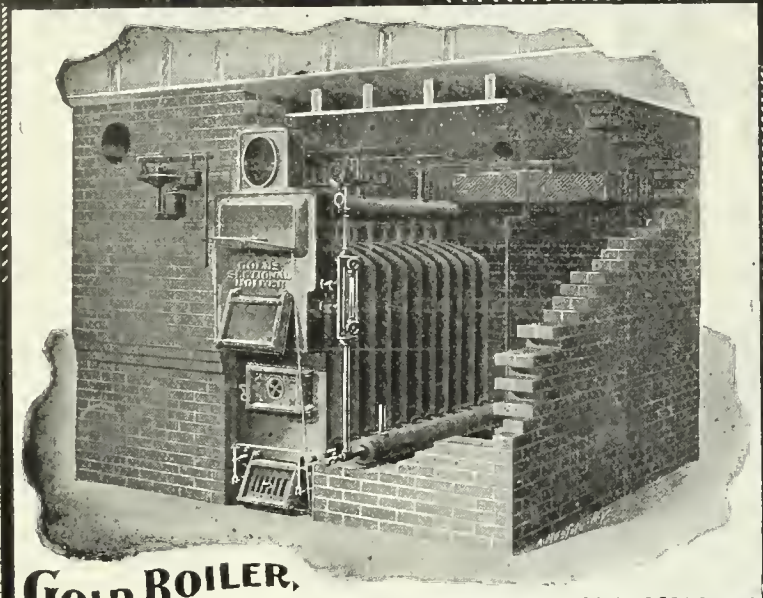

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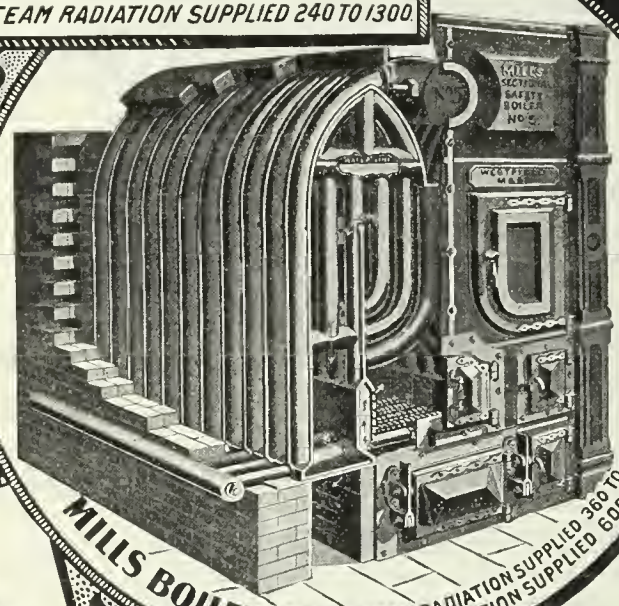

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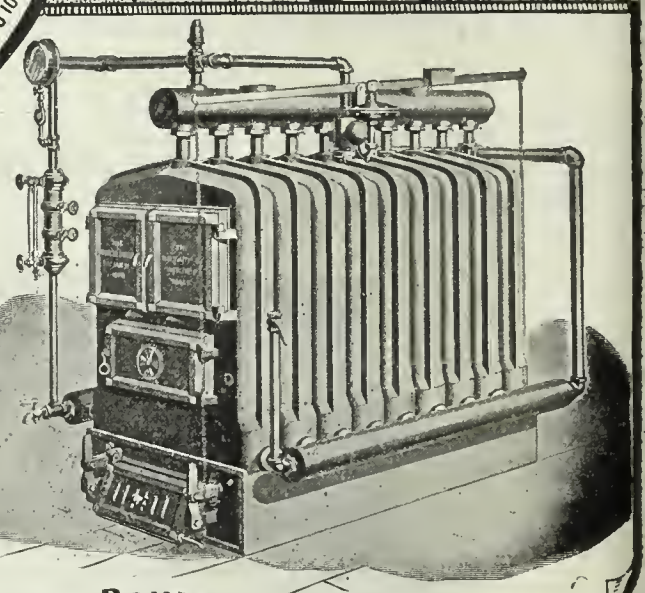

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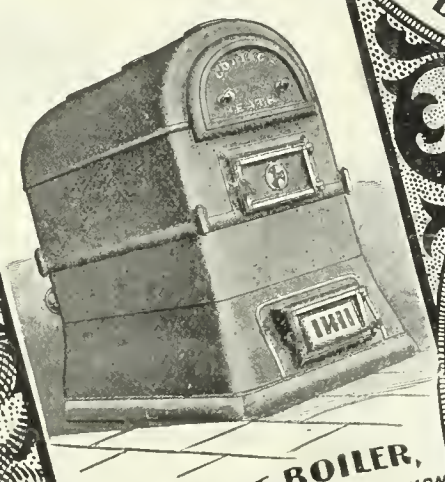

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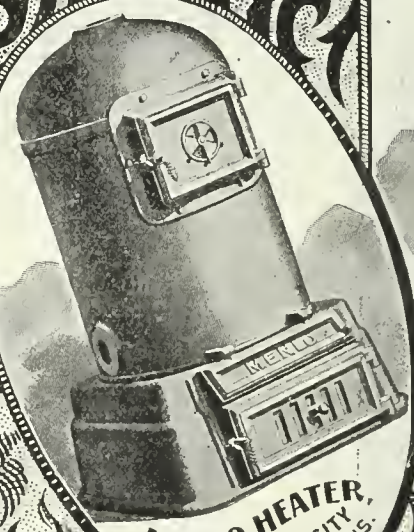

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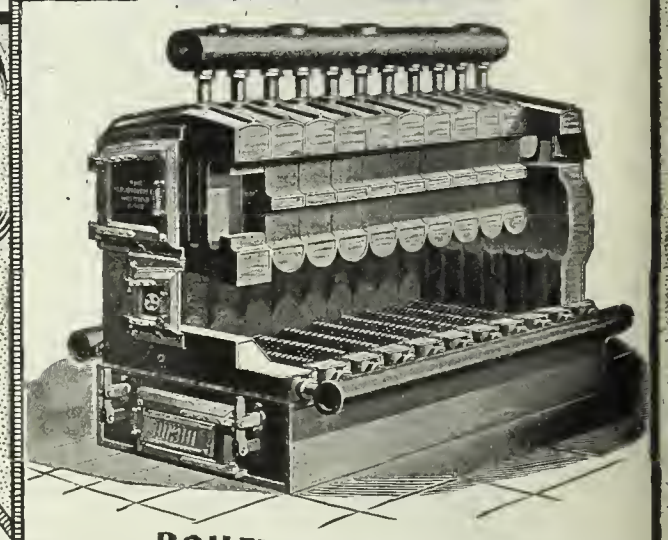

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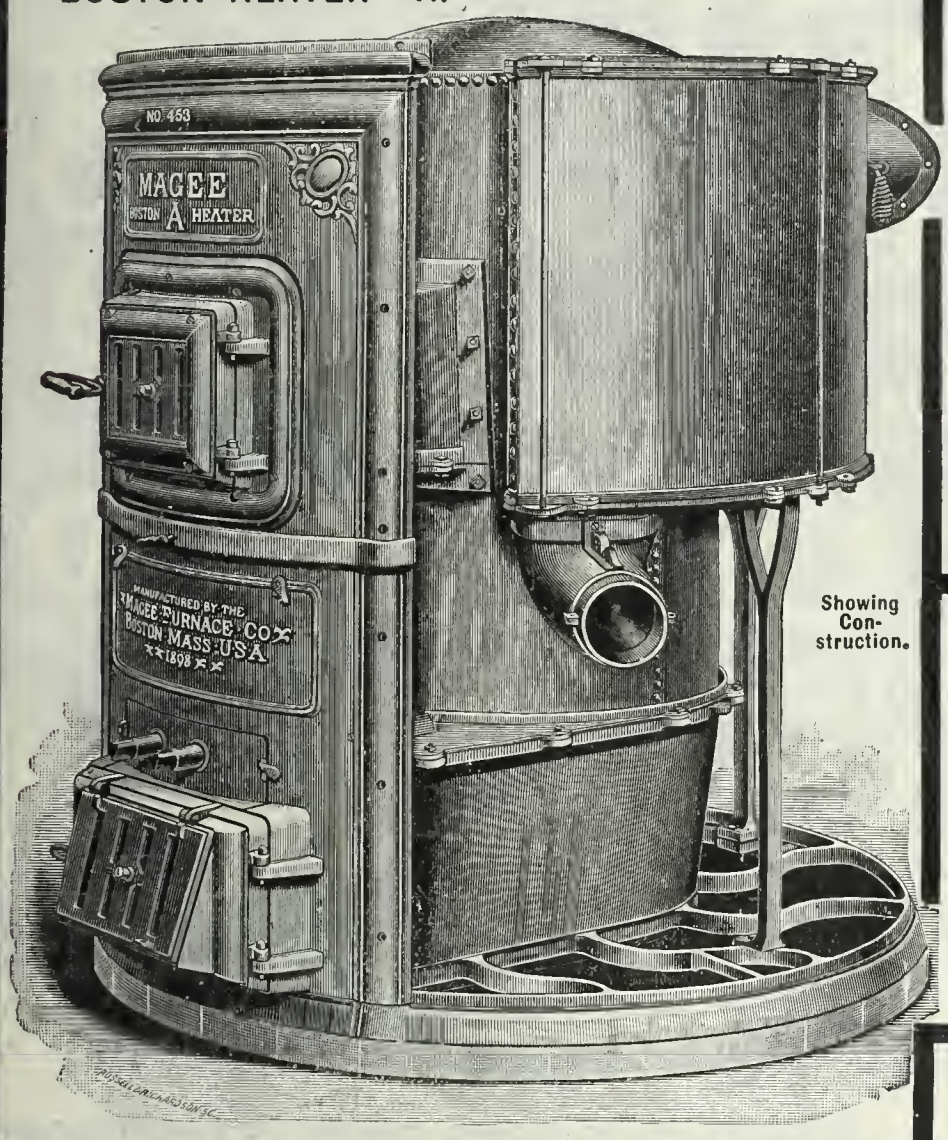

Showing Construction.

Where's the Man or Woman who has never heard of

Magee HEATERS ?

☞Cut shows one of the famous **MAGEE BOSTON HEATERS**—for warm air or warm-air-hot-water combination. They're built to wear. Gas-tight and dust-tight. Have brick lined fire pot—linings that last for years. "Dock-Ash" revolving grate. Furnace is easiest to take care of, furnishes uniform, steady fire, and heats greatest amount of space with given amount of fuel.

Magee Furnace Co.,
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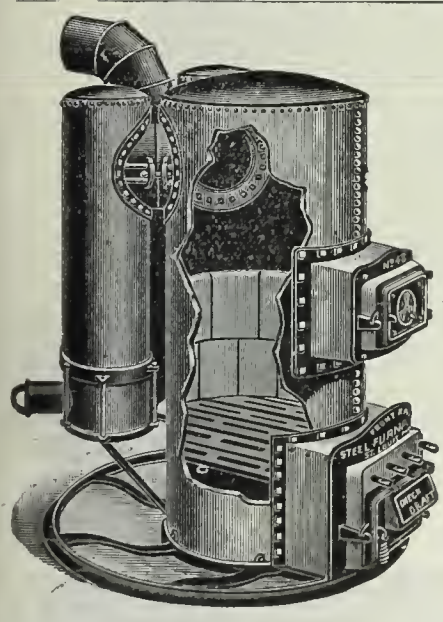


Front Rank Hot Air Furnaces

are built on vertical lines; air comes in direct contact with entire heating surface.

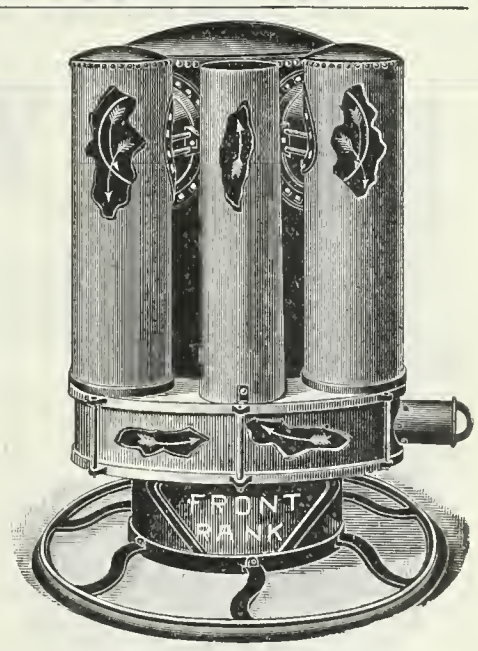
The Front Rank Fire Chamber is one solid sheet of closely riveted steel; being lined above the fire lines with genuine fire clay tiling it is the most durable made.

The radiators are very large and have an unusual area of heating surface in comparison with the size of fire pot.

These furnaces burn hard or soft coal or coke. We also make wood burning furnaces.

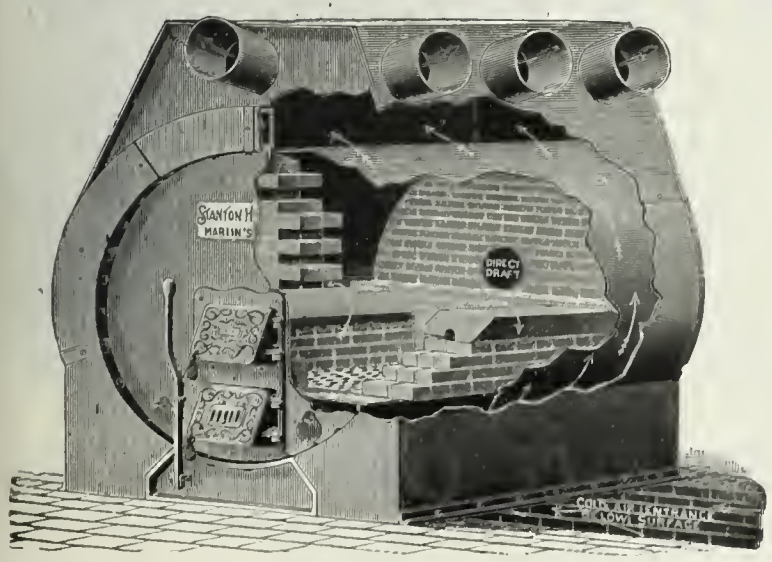
Send for our catalogue, it will give you a better idea of what we make.

FRONT RANK STEEL FURNACE CO.,
2301 to 2309 Lucas Ave., St. Louis, Mo.



The Stanton Seamless Heater,

PORTABLE CASED.



LOUISVILLE, KY., Apl. 5th, 1901.

THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

Gentlemen:—Your favor of the 3d inst. is received asking our experience with the Stanton Heater which you put in for us during the fall of 1899. In reply we will say that it gives us pleasure to express our entire satisfaction with this Furnace. While we have had no severe weather this winter there have been several quite cold snaps, but our offices have been very comfortably heated, and our coal bill (Pittsburgh coal) has been quite moderate compared with other Heaters we have used.

The satisfaction the Heater has given us can be best expressed by saying that we have not heard the Furnace mentioned once this winter. You can see, therefore, that we have had absolutely no cause for complaint.

Yours very truly
ROBINSON-HUGHES & CO.

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THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

See our advertisement next week.

Royal Heaters.

MANUFACTURED BY THE

HART & CROUSE Co.

UTICA, N.Y.

ALL THE LEADING LINES OF

STEAM, HOT WATER & HOT AIR,

FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST., N.Y.
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79 LAKE ST., CHICAGO,
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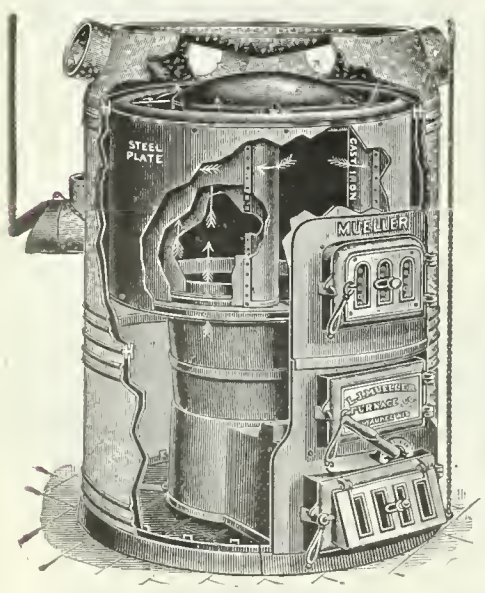
WINCHESTER

How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.

HEATER.



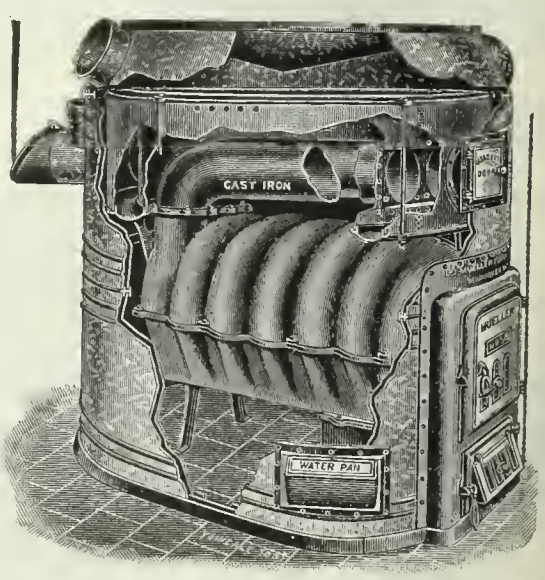
THE SUCCESS
OF
MUELLER
FURNACES

Has been attained by giving

FULL VALUE

If you are not one of our customers we hope to make you such.

Write for our 1901 Catalogue and prices.
Get our special Register offer.



190 Reed St., **L. J. MUELLER FURNACE CO.,** MILWAUKEE, WIS.

OVER $200,000,000 spent yearly in the United States alone for advertising.

There are some things that the price you pay is wholly determined by what the sellers think they can obtain through sentiment attached to an extensively advertised name.

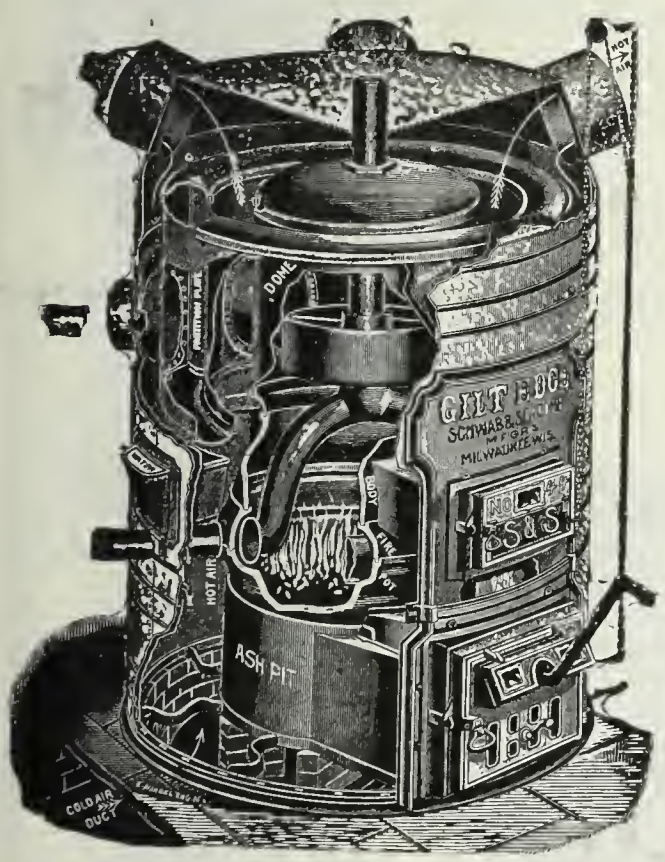
Remove the name from the front and some Furnaces wouldn't sell for $40 that are commonly held at $80.

No part of the price you pay for a "DIGHTON" helps to maintain the dignity of a large city store.

The price you pay for the "DIGHTON" is for real FURNACE VALUE ALONE and the results you can obtain with it.

It is equal in every way, and better in many ways than others you pay twice what we charge for the "DIGHTON."

DIGHTON FURNACE CO., Taunton, Mass.



UTILIZED radiating surface, that is economy. Sectional fire pots from 1 in. to 2 in. thick and other parts in proportion, that is durability. Positive gas-tight joints, that is necessary to health. These, with all other improvements for ease of management, are combined in the Gilt Edge Furnaces. They are made for all kinds of fuel, and are the very best.

Write for Catalogue and Prices to

R. J. SCHWAB & SONS CO.,

Mfrs.

MILWAUKEE, WIS.

E. E. DUNNING, Mgr. Furnace Dept.

KEEP UP WITH THE PROCESSION.

CONTRACTORS USING OUR BOILERS

Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

If this interests you drop us a line and receive our NEW Catalogues and Prices.

KEWANEE BOILER COMPANY

Home Office and Factory,

KEWANEE, ILLINOIS.

Chicago Store, 169 Lake St.

HOT WATER AND HOT AIR

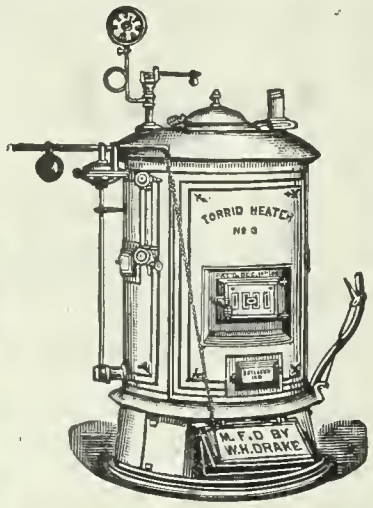
HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

"TORRID HEATER."
FOR STEAM OR HOT WATER



It is Practical in Design.
It is Safe, Being Tested to 200 Pounds.
It is Easy to Manage and Keep Clean.
It is Durable.
It is Sectional and Easily Handled.
It has No Packed Joints.
It is Self-Feed or Surface Burning.
It has the Torrid Patent Rocking and Dumping Grate.
It is Low in Price.

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MANUFACTURED BY

W. H. DRAKE, No. 36 Clinton St., NEWARK, N. J.
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KINEO FURNACES
FOR WOOD.

The Kineo Furnaces are built to secure durability and heating qualities. The smoke enters the radiators on the back and passes entirely around the radiator before entering the chimney, making them the most powerful heaters known. Also manufactured in two sizes with steel radiators.

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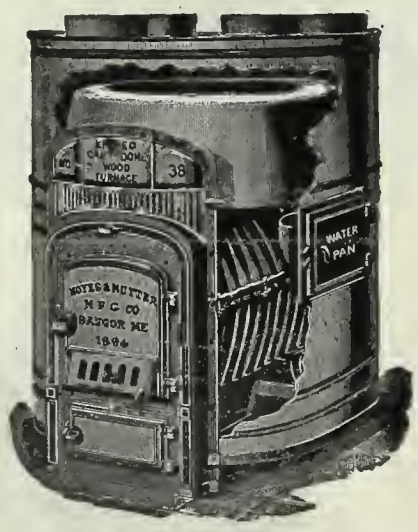
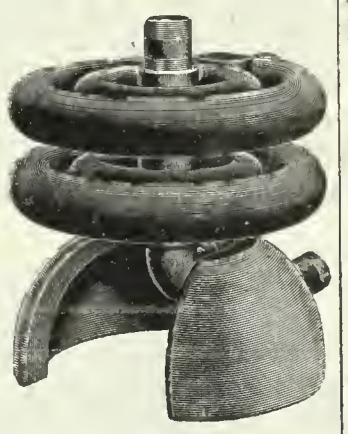
Noyes & Nutter Mfg. Co.,
BANGOR, MAINE.



The Champion
Hot Water Combination Boilers.

THEY FIT ANY FURNACE.

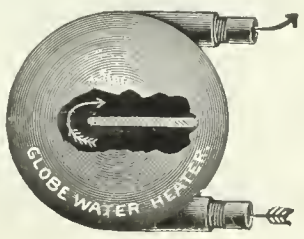


These Boilers are made in three sizes diameter, and from 100 to 600 square feet radiation capacity.

Will heat those cold rooms, or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work.

GLOBE WATER HEATER

Attached to any Furnace will heat water for domestic use.



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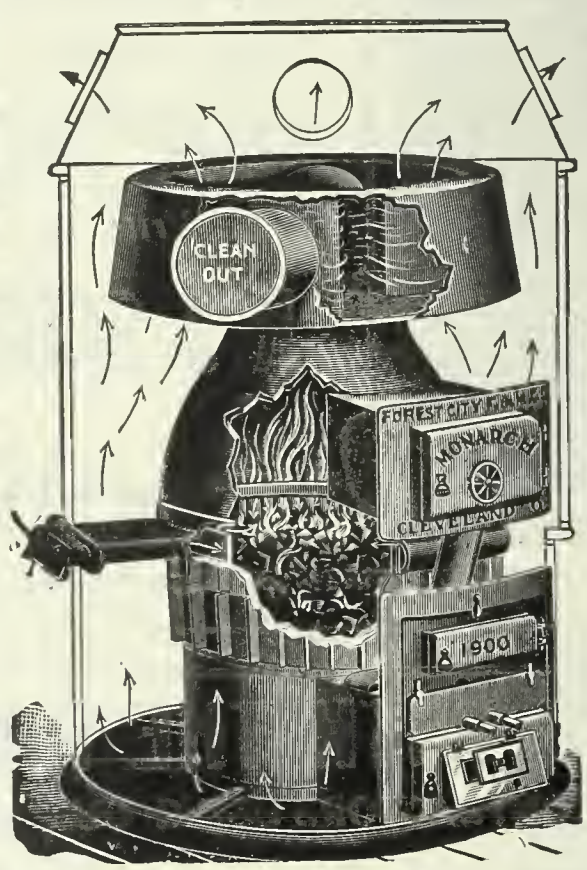
FRANK D. STOLZ,
115 Lake St., - - Chicago, Ill.



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All Cast Iron. For Hard and Soft Coal. At Foundry Prices to Large Buyers.

Inquiries Solicited.

OUR NEW CATALOGUE JUST OUT.

The Forest City Foundry and Mfg. Co.
81 Elm Street,
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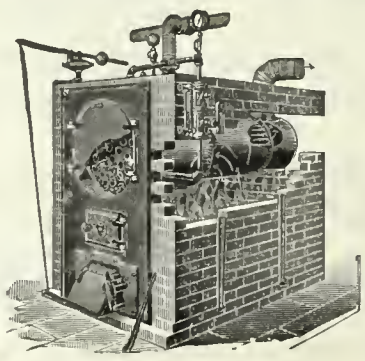
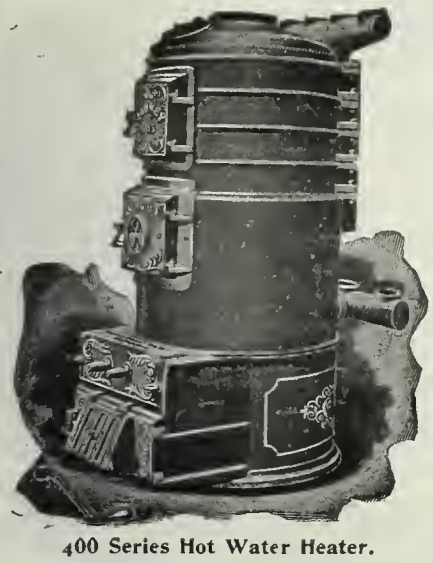
Gray Iron Castings to order. High grade only.



Vance Boilers.

The most economical Steam and Hot Water Boiler on the market. Write for Catalogue and Price List.

VANCE BOILER WORKS,
373 Atkinson St., Geneva, N. Y.



400 Series Hot Water Heater.

THE NAME

GURNEY

on heating apparatus denotes THE BEST. Secure absolute satisfaction by specifying and using them in your heating work. Capacities for all requirements.

Send for latest trade catalogue.

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BENGAL FURNACES

MAKE DOLLARS FOR YOU,

SAVE DOLLARS FOR YOUR CUSTOMER.

ALL CAST IRON.

Produce more heat for a given amount of fuel than any other furnace offered the trade.

BENGALS ARE TRADE WINNERS.

They Heat the House—Not the Chimney.

Secure a BENGAL AGENCY at once.

WRITE FOR CATALOGUE AND FULL PARTICULARS.

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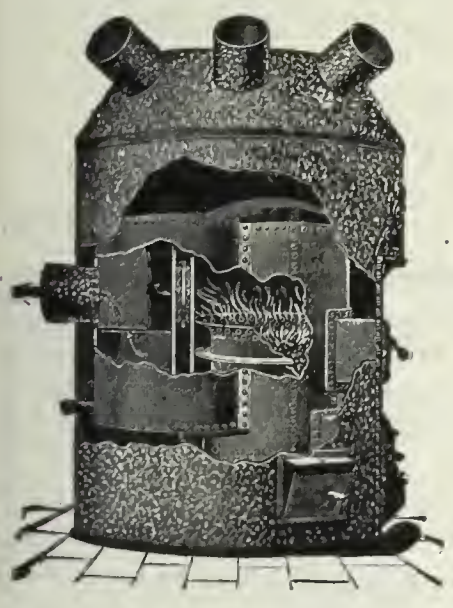

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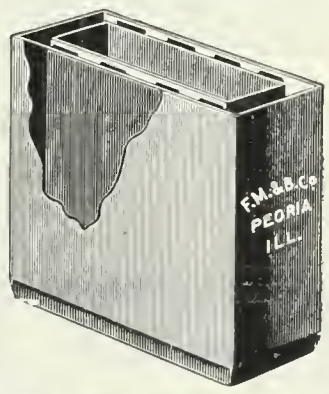

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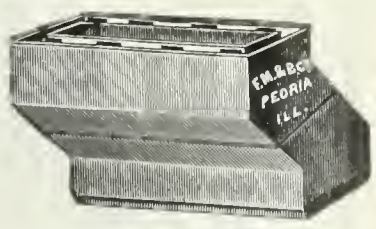

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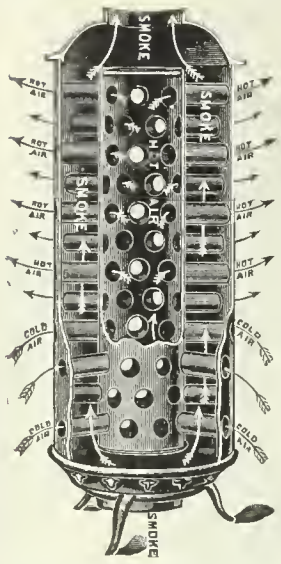

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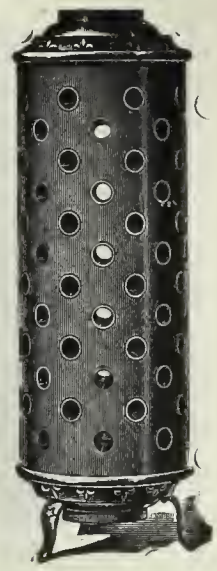

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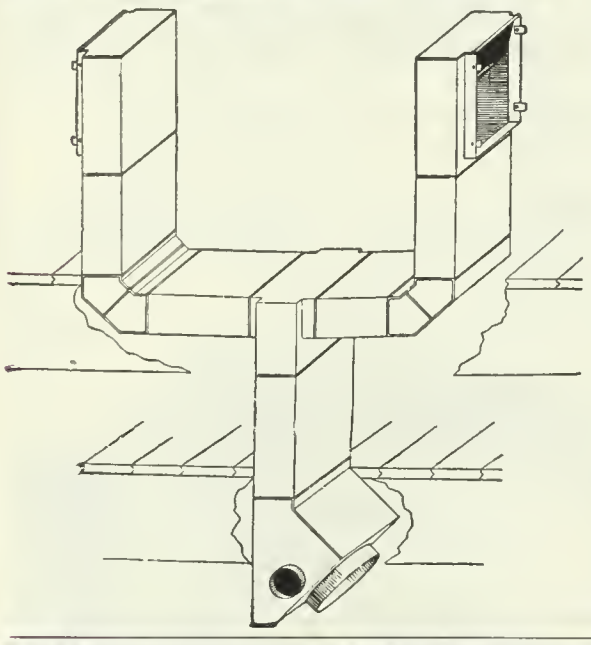

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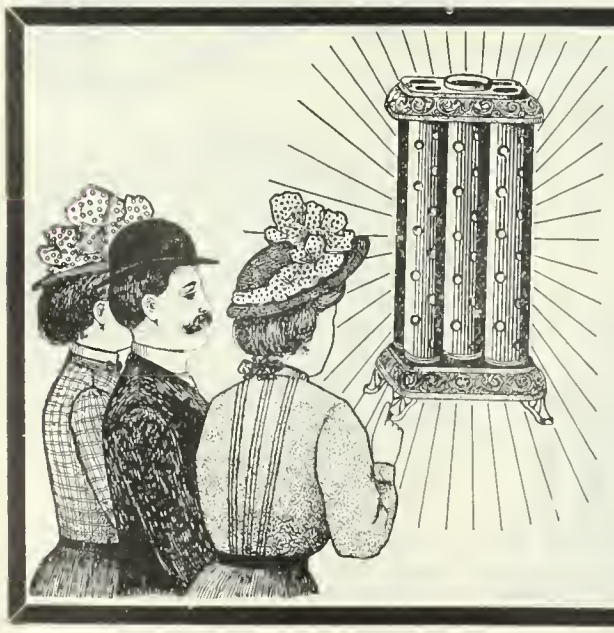

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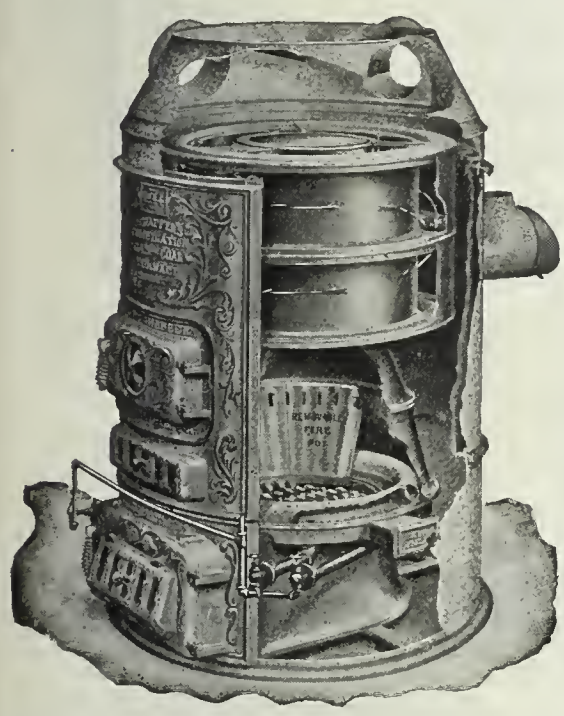

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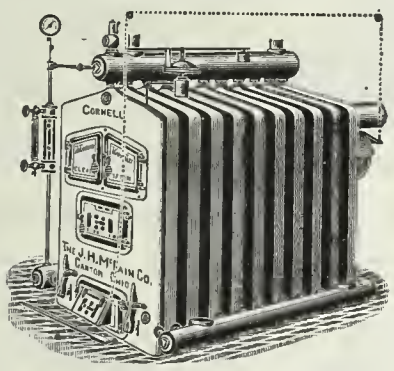

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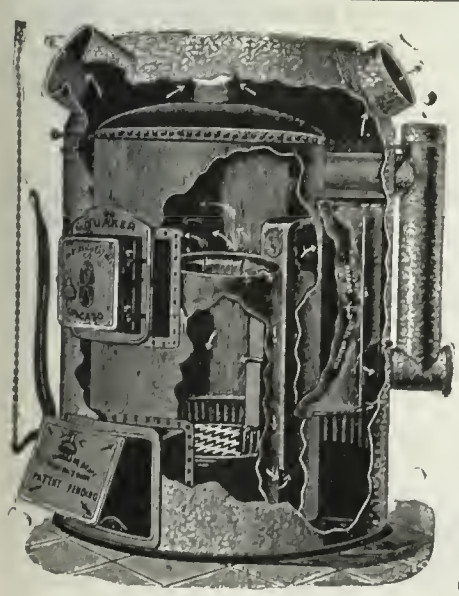

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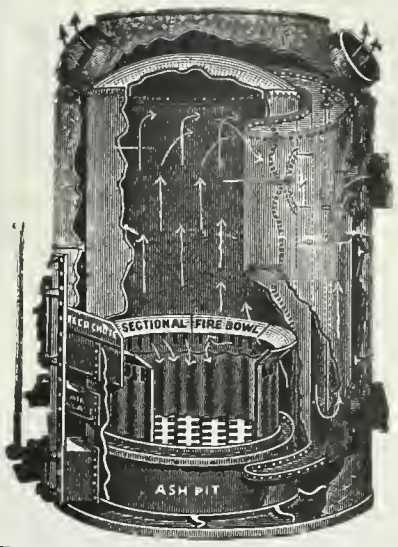

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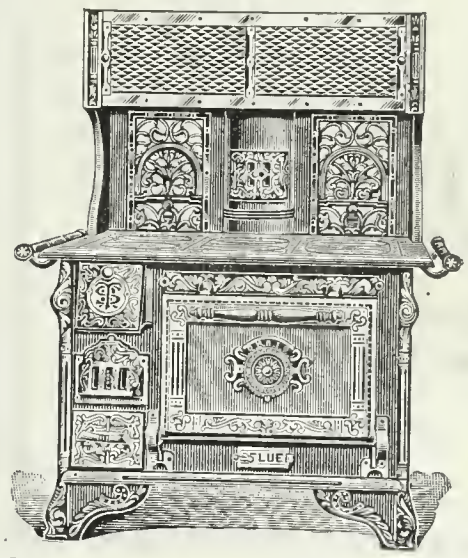

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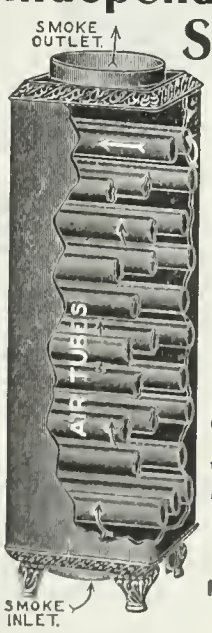

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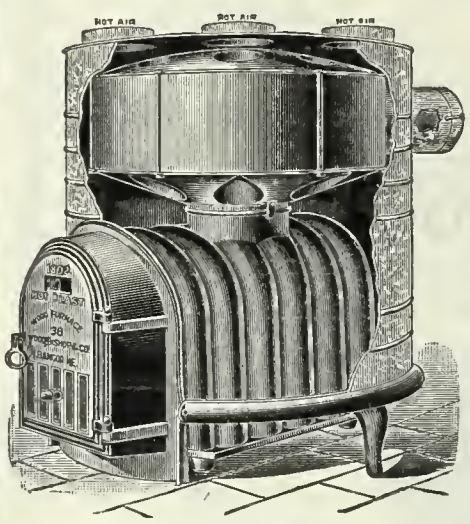

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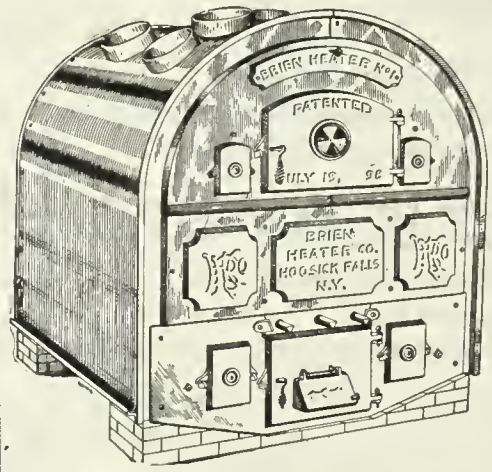

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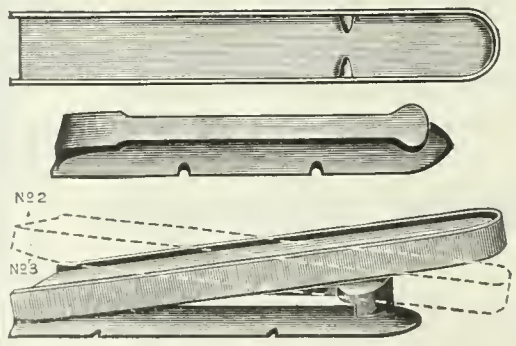

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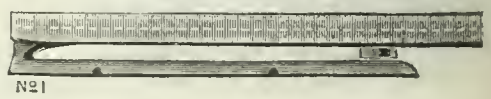

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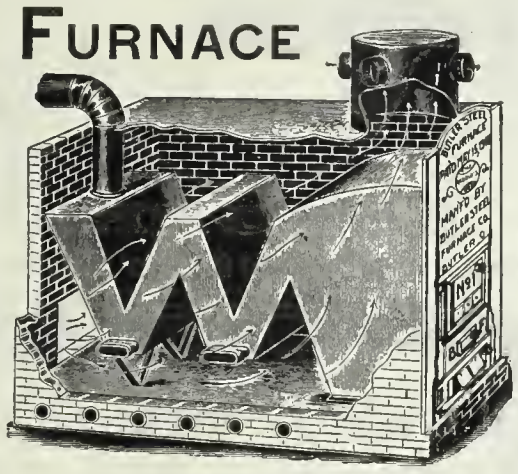

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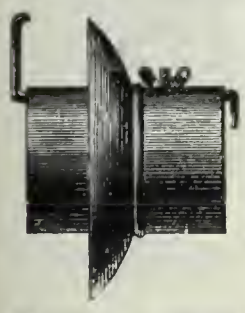

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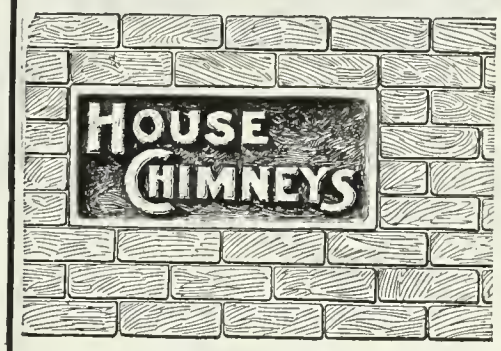

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VARIOUS FORMS OF VENTILATORS or CHIMNEY TOPS 41–45

CONDENSATION IN STOVE PIPES - - - - - - - 46, 47

SMOKE PIPE FOR WOOD FURNACES - - - - 48

REMEDYING DOWN DRAFT IN CHIMNEY - - - - 49–51

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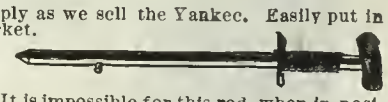

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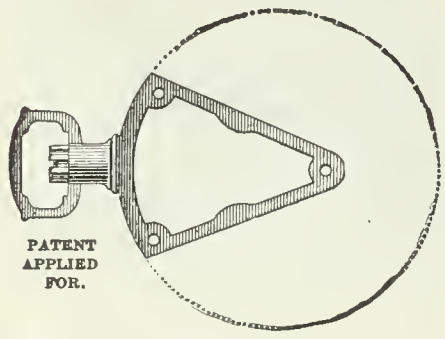

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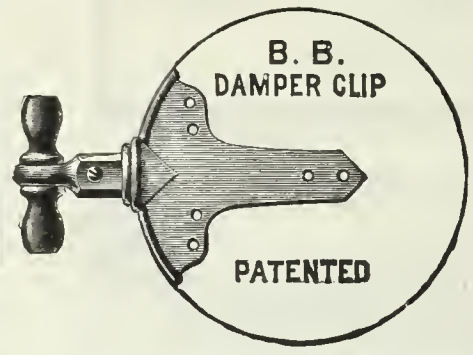

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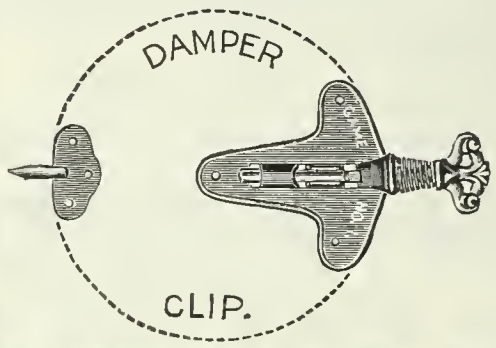

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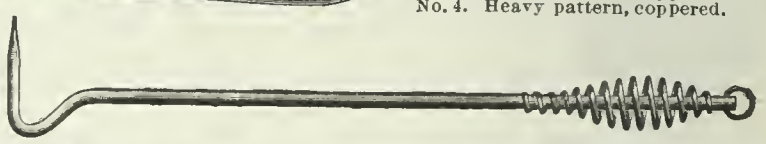

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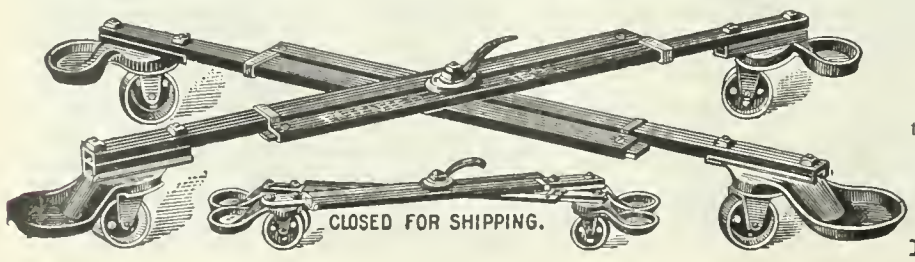

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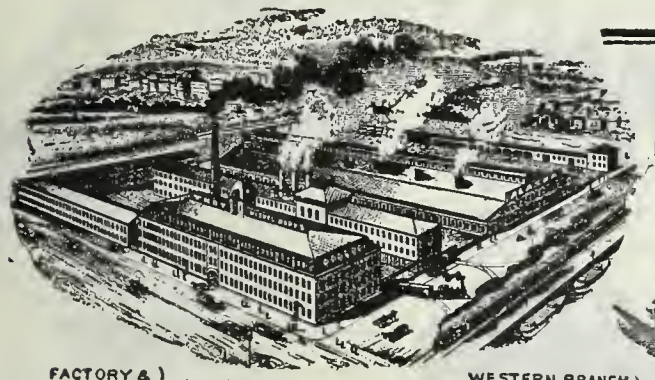

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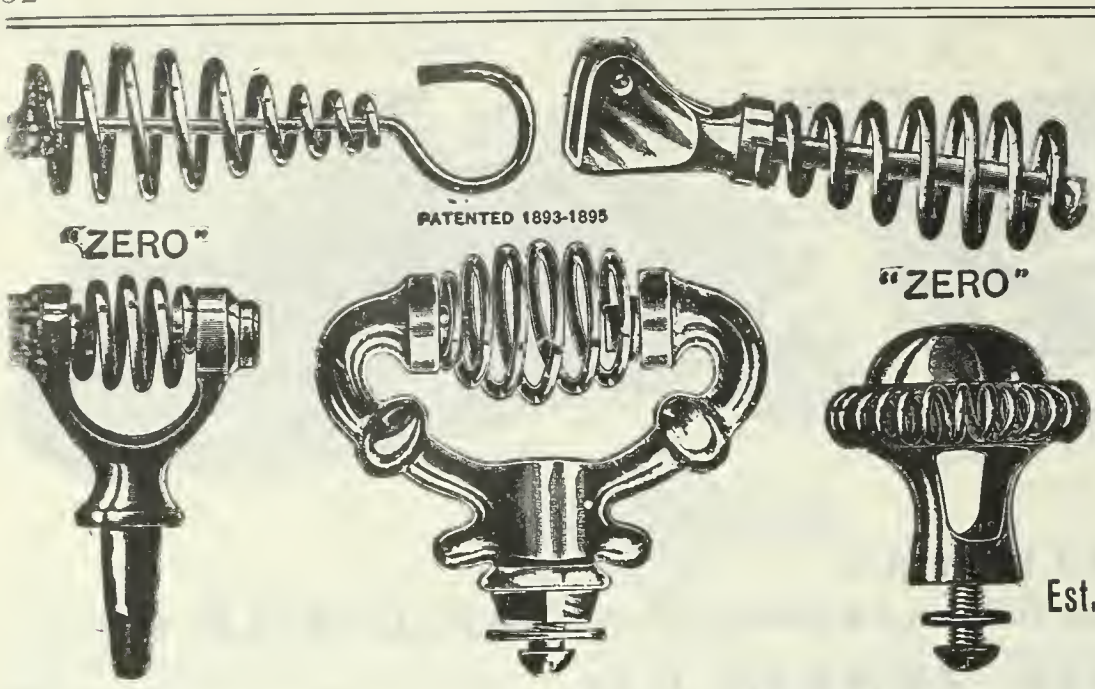

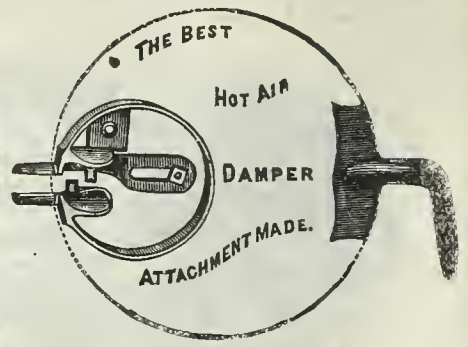

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Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM in throat or under side of Elbow.

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		3 x 3	2½ x 4½
		3 x 4½	4½ x 6½

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		2½ x 3	2¾ x 3½
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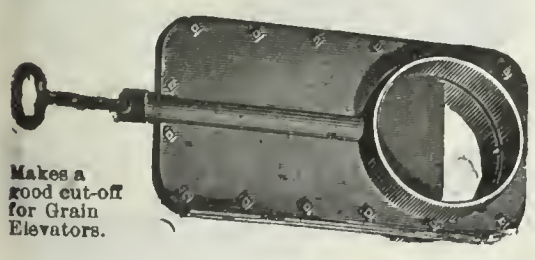

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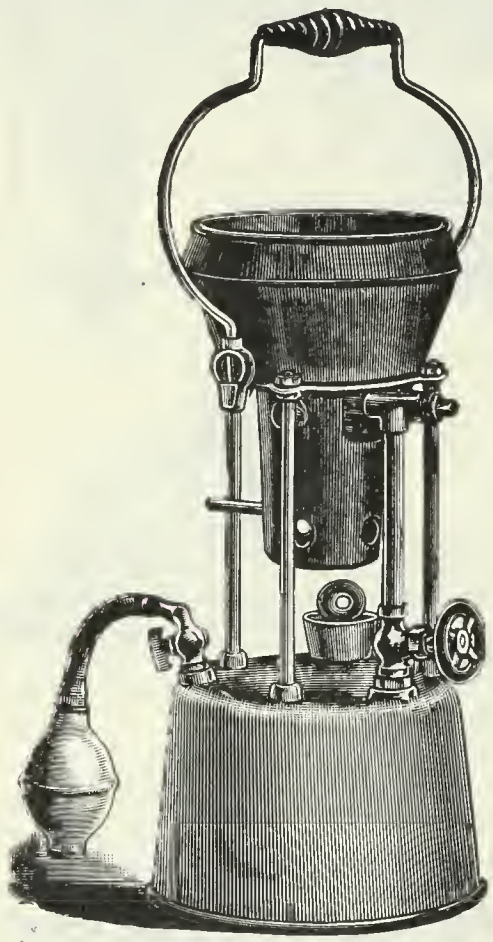
The "DURO."



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The "DURO" Plumbers' Furnace

Has Drawn Steel Reservoir
Heavily Galvanized.
Drawn Steel Coil Cup.
Wrought Steel Bottom.
Patent Wire Handle.
Improved Filling Plug.
Safety Air Cock Joints.
No Cast-Iron Parts.

It weighs less than any other Furnace now in use.

In placing on the market
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we have fully succeeded in producing *the best furnace made.* Most perfect in every detail. Of the highest efficiency. In operation, positive and reliable. Of substantial construction; combining lightness, strength and durability, at no more cost to the trade than the old style.

All component parts are interchangeable, being accurately made and fitted before shipment.

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LEAD PIPE, SHEET LEAD, SHOT,
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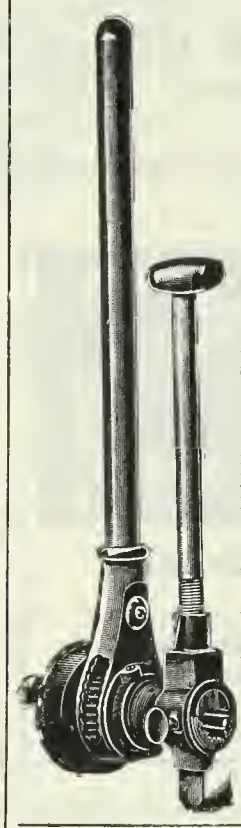

Is an indispensable tool for conveniently threading iron pipe in ditches, under floors, in corners, over head, etc With this tool threads can be cut without removing whole lengths of pipe. This tool is provided with a strong vise which securely grips the pipe and by means of the leading thread the die is forced on pipe and the thread is cut. It is made of malleable iron and steel, and while light in weight, making it convenient to carry, is very strong and rigid. The advantages of this tool make it absolutely indispensable to Plumbers, Steam and Gas Pipe Fitters, Gas and Water Companies, Machinists, etc It takes standard size dies, which are extra if furnished.

No. 1 threads ¼ to 1 in pipe. takes 2 or 2½ in. die, $10.00
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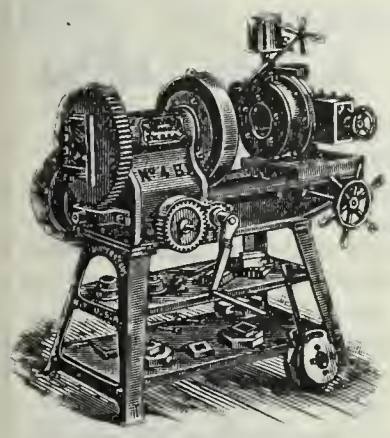

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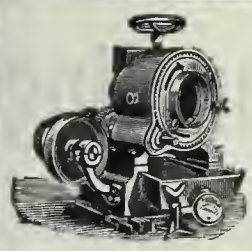

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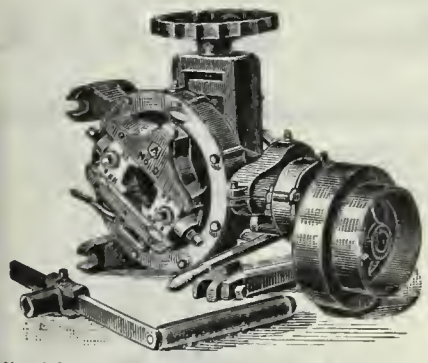

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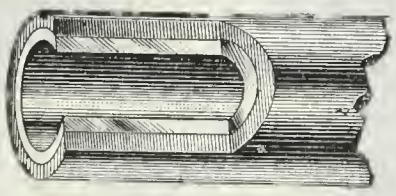

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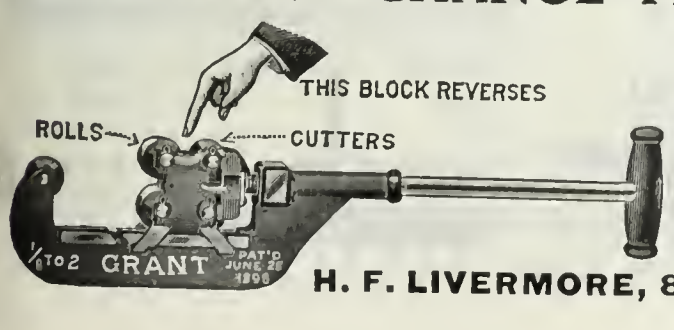

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Nothing to get out of order.

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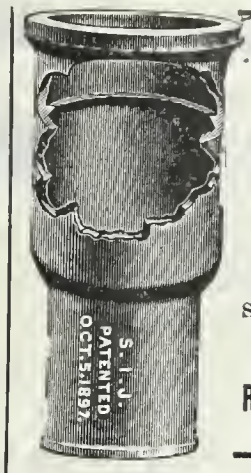

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Saves labor, expense, and makes a neat job.

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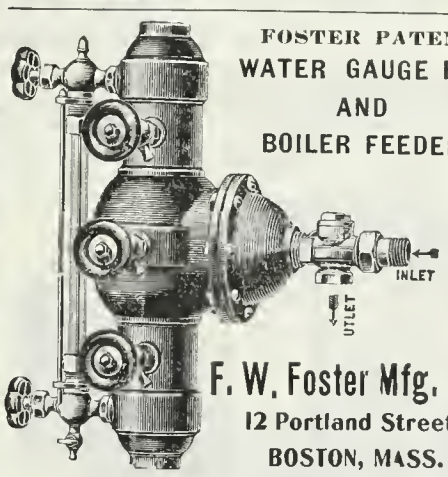

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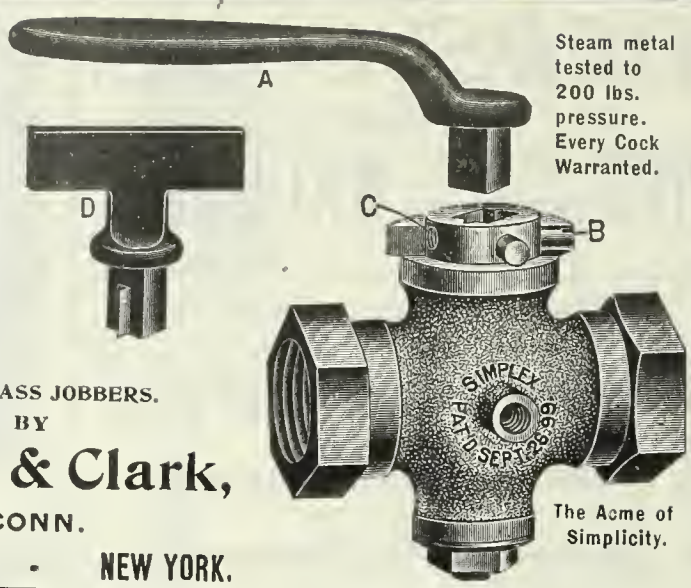

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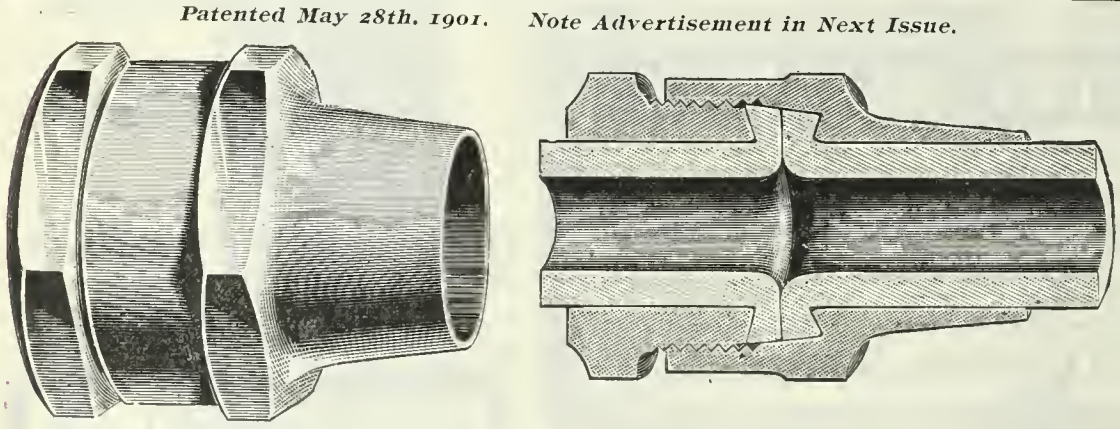

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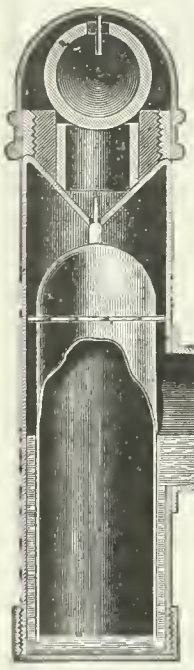

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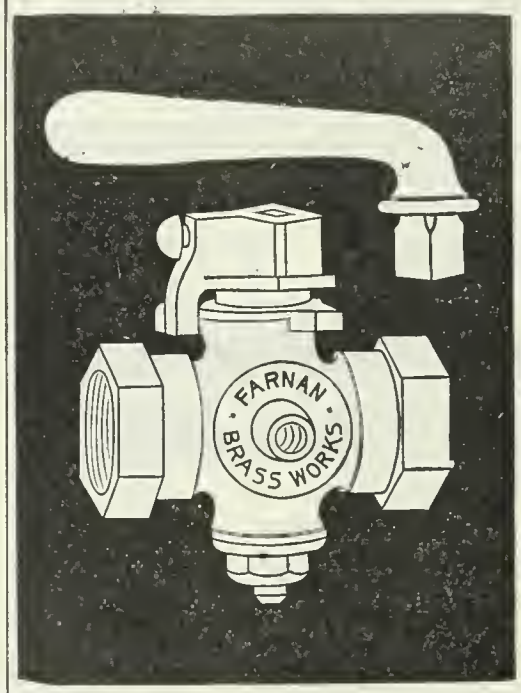

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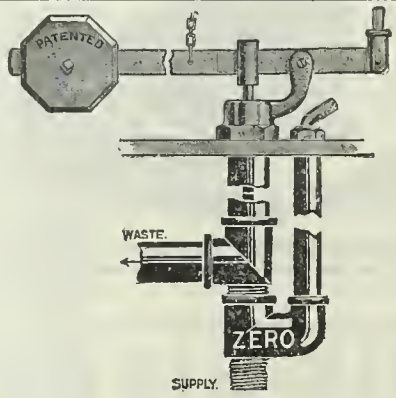

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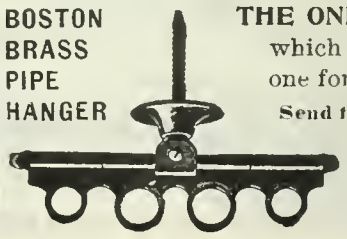

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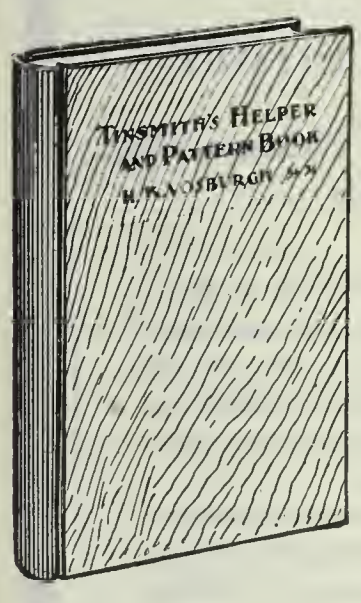

We present a new and improved edition of this useful book, believing it to be one of the most important assistants to tinners and other mechanics that is published. The diagrams and patterns are now illustrated by means of new engravings, greatly improving the appearance of the book. The tables, rules and recipes have been carefully revised, these, with important additional tables, being printed from new type.

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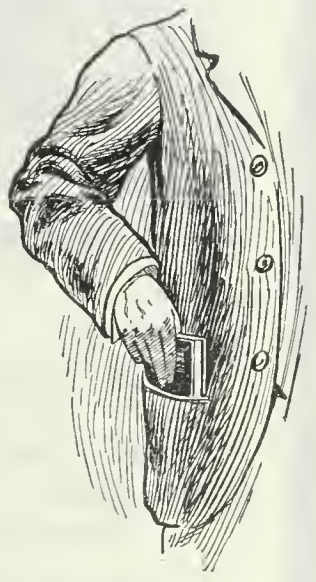
The Tinsmiths' Helper is not intended to be a comprehensive treatise on sheet metal pattern cutting, which field is covered only by "The New Metal Worker Pattern Book," but it contains a collection of patterns of the most common occurrence, described in the plainest way. It meets the requirement of a simple hand-book for young tinners, and will be an invaluable aid to all sheet metal workers for the compilation of tables and rules alone. A list of the contents is given below.



DIAGRAMS AND PATTERNS.

To Find the Center of an Arc.
To Describe an Octagon Within a Given Square.
To Describe an Octagon Within a Given Circle.
To Describe Breasts for Cans.
Can Breasts.
Pattern for Cone.
To Describe Pattern for Flaring Vessels.
To Cut Hood for Stove Pipes.
To Describe Patterns for Flaring Tinware.
The Old German Rule for Patterns for the Cone.
Frustum of a Cone.
Flaring Vessel in Three Pieces.
Rectangular Funnel.
For Strainer Pail or Watering Pot Breast.
Scale Tray or Scoop.
To Find Length of Sheet Required for Oval Boiler. Common Method.
Oval Boiler Cover.
Measure Lip.
Steamer or Pitched Cover.
Heart with Square and Compass.
To Describe a Star.
Pattern for Cutting Balls. To Describe the Gores.
To Describe an Oval.
To Describe Oval with Diameters as 5 to 8.
To Describe an Oval. Two Other Methods.
To Describe Oval by Means of String, Pins and Pencil.
To Describe Pattern for Flaring Oval Vessels. Two Pieces.
To Describe Pattern for Flaring Article with Straight Sides and Round Ends. Two Pieces.
To Describe Pattern for Oval Flaring Vessel. Four Pieces.
To Describe Pattern for Flaring Hexagon Article.
To Describe Pattern for Flaring Square Vessel.
To Describe Pattern for Flaring Article with Square Top and Base a Rectangle. Two Pieces.
To Describe Tapering Octagon.
Flaring Article, Top and Base a Rectangle. Two Pieces.
Round Base and Square Top Article. Two Pieces.
Rectangular Base and Round Top Article.
Square Base and Round Top Article. Two Pieces.
To Describe a Square or Right Angle Elbow. Two Pieces.
To Describe Elbow. Quick Method.
To Describe Three-Piece Elbow.
To Describe a Right Angle Elbow. Four Pieces.
Elbow in Five Sections.
To Describe Pattern for Obtuse Elbow.
To Describe a Tapering Elbow.
To Obtain Length of Piece for Tea Kettle Body.
Mode of Stringing Patterns.
String Pattern.
Description of Boiler Block.

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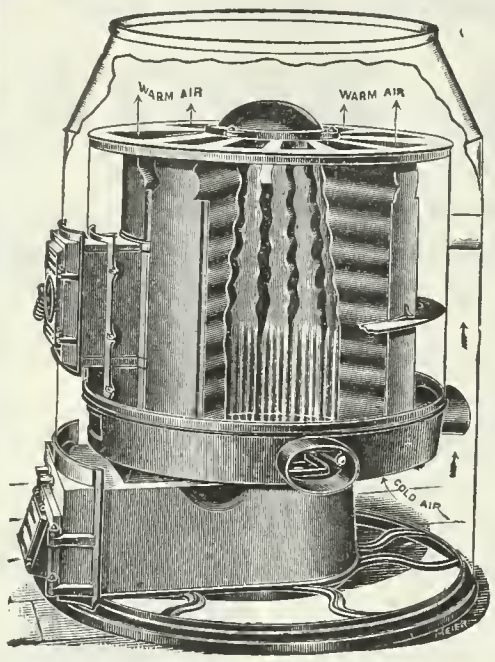
Mensuration of the Circle and Its Sections. **Mensuration of Solids and Capacities of Bodies.**
Mensuration of Surfaces. **Mensuration of Cones and Pyramids.** **Mensuration of Cylinders.**
Mensuration of Spheres. **Mensuration of Polygons.**

TABLES, RULES AND RECIPES.

Table of Gauges of Black Sheet Iron.
Table of Weight per Square Foot of Iron Plates, from 1-16 up to ½ Inch Thick.
Rule for Finding Weight of Sheet Lead.
Table of Decimals Equivalent to the Fractional Parts of a Pound.
Table of Decimals Equivalent to the Fractional Parts of an Inch When Divided into 32 Parts; Likewise the Decimals Equivalent to the Fractional Parts of a Foot.
Table of Ordinary Dimensions of Galvanized Sheets.
Table of Weight of Galvanized Sheets.
Table and Rule to Ascertain the Weights of Pipes of Various Metals and Any Diameter Required.
Table of Weight per Foot of Lead Pipe.
Table of Net Weight per Box Tin Plates.
Table of Approximate Weight of Zinc Sheets.
Table of Relative Weights of Aluminum and Copper Sheets.
Tables of the Areas and Circumferences of Circles.
Table of Capacity of Cans 1 Inch Deep.
Rules for Calculating Circumferences.
Table of Weight of Water.
Table of Number of Barrels in Cisterns and Tanks.
Table Showing the Pressure of Water per Square Inch, Due to Different Heads, from 1 to 250 Feet.
Measures of Capacity and Weight.
Tables of Sizes of Tinware in the Form of Frustum of a Cone.
Table of Effects upon Bodies by Heat.
Practical Receipts for Solders, Cements, &c.

PRICE, ONE DOLLAR, POSTPAID.

David Williams Company, Publishers. 232-238 William St., New York.



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COOK & VAN EVERA CO.,
38-40 E. Lake St., Chicago, Ill.
Western Selling Agents.

JAMES SMART MFG. CO.,
Brockville, Ont.
Sole Manufacturers for Canada.

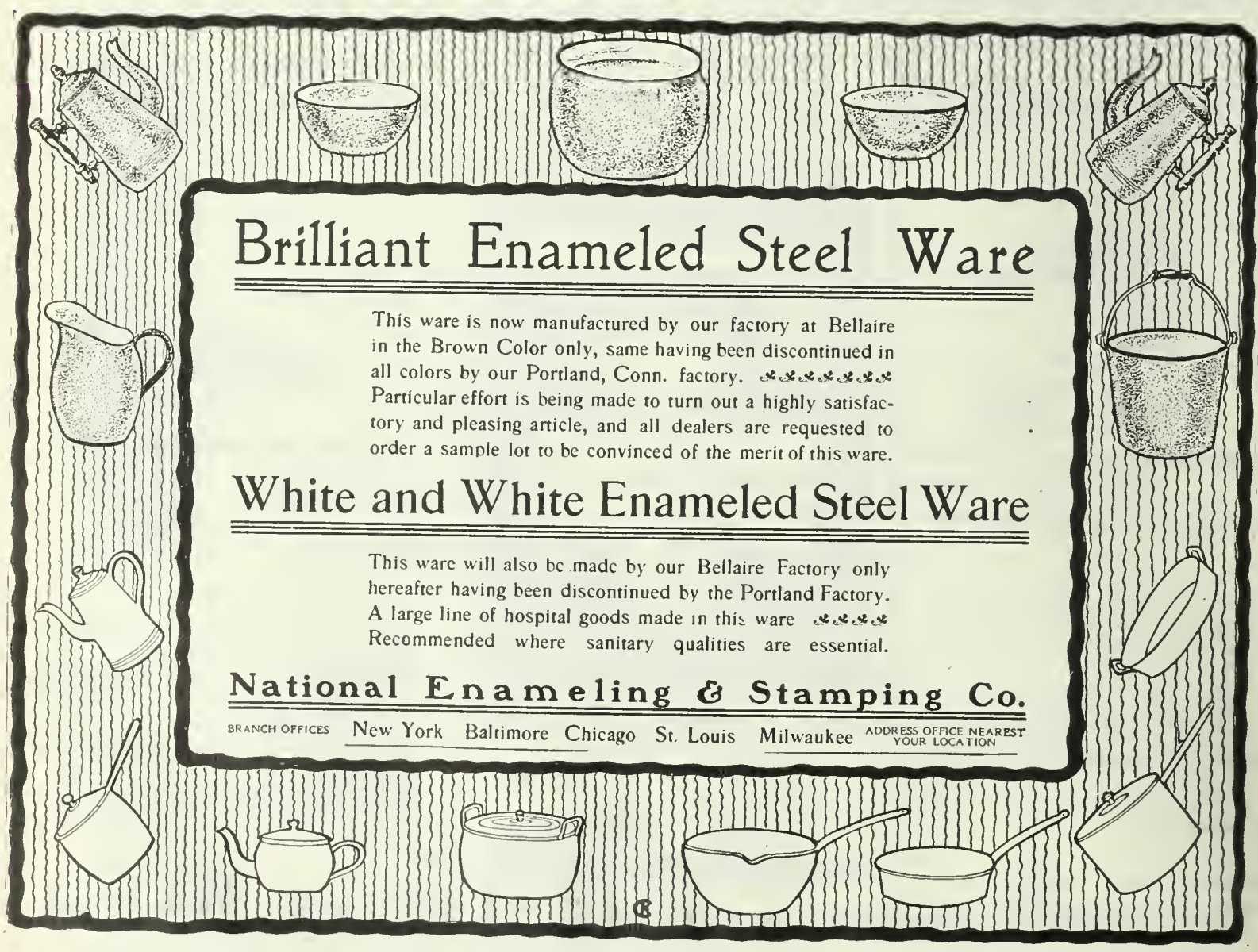
The Kelsey Warm Air Generator

SEE OUR EXHIBIT AT THE PAN-AMERICAN EXPOSITION.

World's Columbian Exposition, Chicago, 1893, Award, With Medals.

For a new and original, and very efficient form of Warm Air Heater, in which heavy cast iron sections, with corrugated sides, through which is circulated the fresh air, form the fire box and combustion chamber, and are exposed on all sides and throughout their length to the fire and hot gases, thus exposing an exceptionally large surface to the fire.

For the means whereby the warm air may be directed in separate and independent channels, and distributed in such proportions as to insure uniformity of heating in different parts of a building.



Brilliant Enameled Steel Ware

This ware is now manufactured by our factory at Bellaire in the Brown Color only, same having been discontinued in all colors by our Portland, Conn. factory. Particular effort is being made to turn out a highly satisfactory and pleasing article, and all dealers are requested to order a sample lot to be convinced of the merit of this ware.

White and White Enameled Steel Ware

This ware will also be made by our Bellaire Factory only hereafter having been discontinued by the Portland Factory. A large line of hospital goods made in this ware Recommended where sanitary qualities are essential.

National Enameling & Stamping Co.

BRANCH OFFICES New York Baltimore Chicago St. Louis Milwaukee ADDRESS OFFICE NEAREST YOUR LOCATION

THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, August 17, 1901.

DAVID WILLIAMS COMPANY, - - PUBLISHERS.

BUSINESS OFFICES:

NEW YORK.....232-238 William Street.
PHILADELPHIA.....117-119 South Fourth Street.
BOSTON.....33 Mason Building.
PITTSBURGH.....Room 509 Hamilton Building.
CHICAGO.....1205 Fisher Building.
CINCINNATI.....Rooms 22-24 Pickering Building.
ST. LOUIS.....1205 Chemical Building.
CLEVELAND.....312 The Cuyahoga.
LONDON.....Hastings House, Norfolk St., Strand.

Volume LVI.....No. 7
Index to Reading Matter.....Page 60

Prices on the Up Grade.

For sixteen months, beginning with March of last year, the general level of values of staple goods in this country pretty steadily declined. The high water mark of prices was reached in February, 1900, since which date a downward reaction has been in operation, touching the low water mark in June of this year. There are strong indications, however, that a definite period has been set to the dropping tendency of values, for, according to *Bradstreet's*, the general level of staple prices in July and August has again turned upward with a gain of 1.5 per cent. over the June mark. Compared with January 1, this year, the loss on August 1 showed only one-half of 1 per cent, so that practically all the decline of this year has been recovered. Moreover, prices in several lines, notably in iron and steel manufactures, corn and cotton, have risen materially since the beginning of August, owing to strikes and shortage of materials and crops. Consequently it is safe to assume that the present general level of staple prices is the highest of the year. The recent strengthening of values has been made more or less general, affecting widely separated lines of products, such as the leading cereals, cotton goods, leather, petroleum, anthracite, coal and coke, wool, tin plates, sheet iron, provisions and building materials, and including a large number of the articles used by the trades represented by this paper. In the plumbing and heating trades, particularly, prices of many kinds of supplies have risen sharply in the past two or three months. Almost everything in this line made of iron or steel has stiffened in value of late, as those who carefully follow our weekly trade reports cannot fail to have noticed, and the tendency is still upward. As it is a healthy advance, based upon the law of supply and demand, the chances are that higher prices will be the rule for some time to come.

The Social Element in Business.

A very healthy tone is often given to trade simply through a better understanding between manufacturers, which is based on personal acquaintance and informal meetings in a social way. Competition is frequently much more strenuous and unreasonable than it needs to be simply because the parties are strangers to one another and perhaps animated by a spirit of needless animosity. Not infrequently a manufacturer is surprised to find how amiable a person and how good a companion is one whom he has only known as a rival in trade. Competition must necessarily, under the laws of trade, remain competition, but it often loses its bitterness and something of its intensity, and becomes less unreasonable, because of personal relations between the parties. The influence of this better understanding between manufacturers is frequently seen in the market without being recognized. We have in mind a leading line of goods in which competition between manufacturers, both East and West, has long been so fierce as to result in bringing prices down to an unprofitable level. Attempts at formal combination had often been made which were repetitions of the old story, the agreements being made only to be broken. Altogether the situation was unsatisfactory and little money was made. A different condition of things now prevails. An understanding in regard to the extreme price at which orders should be accepted for present and future delivery has been reached and is being lived up to. This desirable state of things, we are advised, has been brought about by social meetings of the manufacturers, who have recently had several outings, thus utilizing the summer season for vacation purposes which contributed directly to business success. Those who are thus brought together regard themselves as members of a club, of the very existence of which the trade are unaware, but of which the improved condition of the market in this line is a direct outcome.

The pig iron statistics of *The Iron Age* for August 1 show that the output of the blast furnaces declined from 310,950 tons weekly on July 1 to 303,847 tons on August 1, although the number of furnaces in blast increased from 249 to 257 during the month. This is partly accounted for by the fact that the production of many furnaces was a little below the normal. The stocks of pig iron reported by makers remained practically stationary, being given as 387,329 tons on August 1, as compared with 392,598 tons on July 1. This shows that the consumption is taking care of the current output, large as that is. In the Pittsburgh district the pig iron market has weakened, owing to the fact that buying by the United States Steel Corporation has virtually ceased for some time to come. Otherwise the steel strike has not affected the market so far to any appreciable degree.

A fact which is not quite generally appreciated by those engaged in mechanical and similar pursuits is that the monopoly granted by patents for inventions is becoming more valuable. The consumption of all articles, due to the very rapid growth in the population and in the industrial strength of this country, makes controlling patents more and more capable of producing a larger revenue. As we expand our export trade in manufactures even consumers in distant countries can be made to pay tribute. We know of instances where recent improvements upon epoch making older inventions have fetched more money than the original inventor ever dreamt of securing.

The Society of German Engineers has undertaken an important work in the preparation of a trilingual technical dictionary, designed to comprehend all the terms used in the technical sciences. This publication, under

the name of Technolexicon, will include three languages, English, German and French, and will give all the known technical words and expressions in use, with the source of each. The society has secured the services of the well-known German lexicographer, Dr. Herbert Jansen, as editor, and has established an office at 49 Dorotheen strasse, Berlin, N. W. The co-operation of all technical and trade societies or associations is desired by the publishers in the preparation of this *magnum opus*.

The managers of the World's Fair, to be held at St. Louis, Mo., in 1903, in celebration of the centennial of the Louisiana Purchase, are pushing things in a very vigorous manner. From all accounts the projected exposition is a colossal enterprise. It is to be thoroughly international in its scope and all the nations of the world will be invited by the President to participate in displaying their natural and artificial products. According to the plans the exposition will cover nearly 1000 acres of land and will exceed in size and cost the Columbian Exposition in Chicago. A large sum of money was appropriated by Congress in aid of the enterprise and the State of Missouri, the city of St. Louis and private capital have all come forward with unprecedented liberality in support of the undertaking. There seems every justification for the claim of its promoters that the St. Louis World's Fair will take a place among the finest of the world's industrial expositions.

The Railroad Commission having ordered a reduction of the freight rates on fuel oil in Texas after August 29, the coal operators have begun a fight against the Beaumont oil producers and propose to reduce the price of coal and lignite throughout the part of the State where oil is likely to be used for fuel to a figure that they expect will shut out oil competition. The capacity of the Beaumont oil wells is estimated to aggregate about 1,500,000 barrels of fuel oil daily. This output is equal to about 350,000 tons of coal, while the annual coal production of the State is only about 4,400,000 tons. The oil producers say they are ready to meet any competition and that they can put the price of fuel oil down to 10 cents a barrel, if necessary, and still make a profit. At present the ruling price is 30 cents a barrel. Consequently the profits of the oil men must be enormous.

The Elder-Dempster Line of transatlantic steamers has made a remarkably generous offer to British trades unions which has been accepted by several of the unions The line has offered free passages to the United States and back again to official delegates of any trades union who will visit this country for the purpose of obtaining information as to the conditions of labor and employment which prevail here, and for ascertaining what advantages the American manufacturers possess over the British in tools, labor saving machinery and appliances and for investigating the natural and artificial facilities that are available on the American Continent. The opportunity is a splendid one for British workmen to get an insight into the industrial life and methods obtaining in this country.

CAREFUL BUYING FOR PLUMBERS AND METAL WORKERS.

The following letter touches upon a practical subject which we take pleasure in referring to our readers:

I am doing a nice little business as plumber and metal worker and manage to make it pay so that most every year I have a little to lay by or put into the business. I have never given much attention to buying my goods, paying about what the houses with whom I deal ask, but, of course, look out that they do not impose on me. On the whole, I think they treat me about right. I have just been talking with a man doing the same kind of business in another town, who tells me that he often saves 10 per cent. or more on many goods by looking into the matter carefully and buying where he can do the best. He is certainly buying lower than I do on some lines.

What I want to know is, will it pay me to try to get lower prices. Will I stand as well with my jobbers and manufacturers? It will, of course, take some of my time which might perhaps be better spent.

If I get some one to help me in this department it will cost something. Will it on the whole pay me to give better attention to this department of my business?

Perhaps some of our readers, among whom there must be many good business men, can help me with their advice. ENTERPRISE.

We invite a frank discussion of this important subject, and shall be glad if the trade will discuss it freely. Their answers will be given without name or address, unless they request otherwise.

Pan-American Exhibit of International Correspondence Schools.

The display of the International Correspondence Schools, Scranton, Pa., at the Pan-American Exposition, Buffalo, has just been completed, and compares very favorably with the surrounding exhibits of other educational institutions. It is situated in the northeast corner of the Liberal Arts Building, where an inclosure has been erected for all educational work.

The exhibit occupies three cases. The lower part of the cases contains complete sets of bound volumes, above which are arranged three cases containing about 100 cards on which are mounted samples of students' drawing plates, photographs of the different departments of the schools, and practical examples of students' instruction papers and original designs executed after studying the courses of the institution. Above the cases of drawing plates is a high screen covered with red burlap, across the top of which, in large brass letters, the title, "International Correspondence Schools, Scranton, Pa.," is inscribed. In the center of the screen is the framed certificate awarded by the Franklin Institute of Philadelphia, on each side of which is a tablet describing the schools' methods and what they accomplish.

The electrical outfit, drawing outfit and blow pipe outfit form conspicuous features of the arrangement between the tablets and the top of the cases containing the cards, and small signs, or labels, over each inform the visitor that one of these outfits is furnished to each student in certain courses. Sample question papers, and students' written replies thereto, in the various subjects taught show the method of examining the student and the character and appearance of his replies to these examination papers, and drawing plates from all the courses representing the elementary and advanced work of students demonstrate the progress that can be made by this system.

New Publication.

GUIDE TO BRONZING AND ENAMELING. By James Croke. Price 25 cents. Size, 5½ x 7 inches; 37 pages.

This little book, which in a second and revised edition has just been published, should be of special interest to steam fitters, as it is largely devoted to the decoration of radiators. The first section deals generally with the subject of bronzing, and gold, copper, brass, aluminum and silver bronzes, with information regarding their various qualities, and the liquids and methods that must be used to apply them so as to preserve their color, especially when used on radiators. Suggestions are also given for the use of bronzes of different colors together to get the best effect. Patent bronzes and paints are also discussed. The use of gold paint and picture frame gilding and bronzing by dipping are explained, as well as bronzing for printers. Another section of the book is devoted to enamels and enameling, as applied to furniture, terra cotta articles, picture frames, and to bathtubs and radiators, with instructions how to mix the different colored enamels to get the desired tint. The coating of articles with enamels, commonly known as japanning, is explained, with instructions about the use of ovens and their proper temperature.

STOVE MAKERS AT THE ASTOR HOUSE.

On Tuesday President H. T. Richardson presided over a meeting of the New York City Stove, Range and Furnace Manufacturers' Association at the Astor House, at which most of the members were present. Those who were prevented from attending sent letters expressing regret for their absence and their readiness to carry into effect any action taken. The meeting was marked by the prompt disposition of all subjects presented, and the opinion was generally expressed by those present that the promising outlook for the stove trade which existed last spring gave every evidence of a present realization.

The operation of the emergency measures for meeting competition was amply discussed. While in some instances the action of the association had been mistaken for a break in prices, it was found that, on the whole, it had strengthened the market, and, with the other influences of the association, had been the means of getting better prices and profits for the entire trade.

After some discussion regarding the scarcity of sheet iron and its increased cost, with the probability of further advances, a net advance was decided upon in the price of sheet iron cylinder stoves. There is a strong probability that a further increase will be made in the price of these goods, for the present advance is only about one-third of the reduction made last spring, and as it is the same on stoves of all sizes, it does not cover the recent increases in the cost of material on the larger sizes. It is further pointed out that manufacturers of sheet iron goods in other lines are pursuing the more rational course of advancing their prices in consonance with the rise in the cost of material and the growing scarcity of the same. It is understood that the advance just made on cylinder stoves was a compromise, and it is regarded as likely that if it is well supported a further advance will soon be announced on the grounds above outlined. In the meantime some of the members will advance their prices independently, on the dictates of sound business principles.

The Acme Gas Stove Catalogue.

H. Adler Company, Pittsburgh, Pa., are just distributing a 42-page catalogue, 9 x 6 inches in size, devoted to gas stoves and burners and bearing a front cover design showing two children just out of bed and warming themselves before an open gas fire. The catalogue presents a variety of gas heating apparatus, some of which are of the stove type and others of the open fire character, with asbestos reflectors. The first stove shown is the Monogram, which is an entirely new design of the closed type for natural gas. The body is made of blue steel embossed with appropriate ornamentations, having cast iron doors and ornaments and made for 3-inch flue connections. It is followed by the Acme natural gas stove, which has been improved by the addition of a burner which is said to increase the capacity of the stove three-fold. The Acme gas radiator is a new production made with four, six and eight tubes, 19 and 30 inches high, finished in planished iron with black or bronze base. The Acme and Westminster are copper reflector stoves, while the Duquesne and Tunis are stoves which burn with an illuminating flame and have a perforated body. The Angeles is a natural gas reflector stove, with an asbestos back. The Continental and Yorktown are two new styles of open front gas fires, the Continental being finished entirely in black and the Yorktown having ornamental cast iron top and legs.

The Acme line are open front stoves in different styles of finish, adapted for the use of natural gas or artificial gas. Under the name Acme a variety of natural gas fire place heaters are presented. One page is devoted to the Acme natural gas hot air furnace, made in different sizes adapted for from one to four registers. The last pages of the catalogue show a variety of designs in polished brass fronts for natural gas fires. The Acme gas oven and the Acme and Perfect gas cookers and Acme hot plates complete the catalogue, which also includes a telegraphic code for the convenience of customers.

The Welcome Flat Ranges.

The Syracuse Stove Works, Syracuse, N. Y., and 231 Water street, New York City, are distributing two ten-page folders, one devoted to the Kernan Welcome and the other to the Junior Welcome ranges. The Kernan Welcome range is designed to meet the requirements of the trade, catering to a high class of residence work. It is made with the oven 16, 18 and 20 inches square and with covers 7, 8 and 9 inches in diameter. Both ends of this range are finished in cabinet style, adding to its attractive appearance. The ovens are equipped with a heat indicator and the fire box with water back of ample heating capacity and grates that can be readily removed through the ash pit door. The range is designed for using either a vertical or a horizontal boiler, supported on upright brackets which also support either warming shelves or hot closets. Gas cooking attachments and low closets are also provided. The range is adapted for setting against enamel brick backs or between brick jambs. A feature of the circular devoted to this range is the completeness of the dimensions and information given.

The second circular shows the Junior Welcome range in a variety of styles by means of half-tone engravings. It is presented with brackets supporting horizontal boiler and warming shelf, with a closet, and also with a high shelf and gas attachments. The Junior Welcome Range is also made with low closets and some styles are provided with ash sifter and ash pan.

The Stewart Catalogues.

The Fuller & Warren Company, Troy, N. Y., have adopted a somewhat novel and convenient form of bringing their various stoves and ranges to the attention of the trade. They are sending out a package of ten separate catalogues in covers of different color, each being devoted to one of their special lines of goods. Three catalogues cover ranges adapted for builders' use. Among these is the F. & W. Co. Stewart, made in one size with an 18-inch removable square ventilated oven of wrought steel. It is of sheet flue construction, so that all the six cooking holes on the top are effective, and has a labor saving grate and a water back of ample capacity. The Ideal Stewart is another single oven range, of sheet flue construction with a special direct draft damper and with ovens 18 and 20 inches square, provided with oven door thermometer. It is equipped with an ash pan and the grate is so arranged that it can be readily removed through the ash door. The F. & W. Co. double oven range, is made with ovens 12½ x 20 inches and 14 inches high with drop oven doors. The flue constructions and pipe connections are such that it is claimed both ovens bake exactly alike. Special broiling facilities are provided by having a large open front grate and a drop broiling door so that a broiler can be used directly in front of the fire without interfering with other cooking.

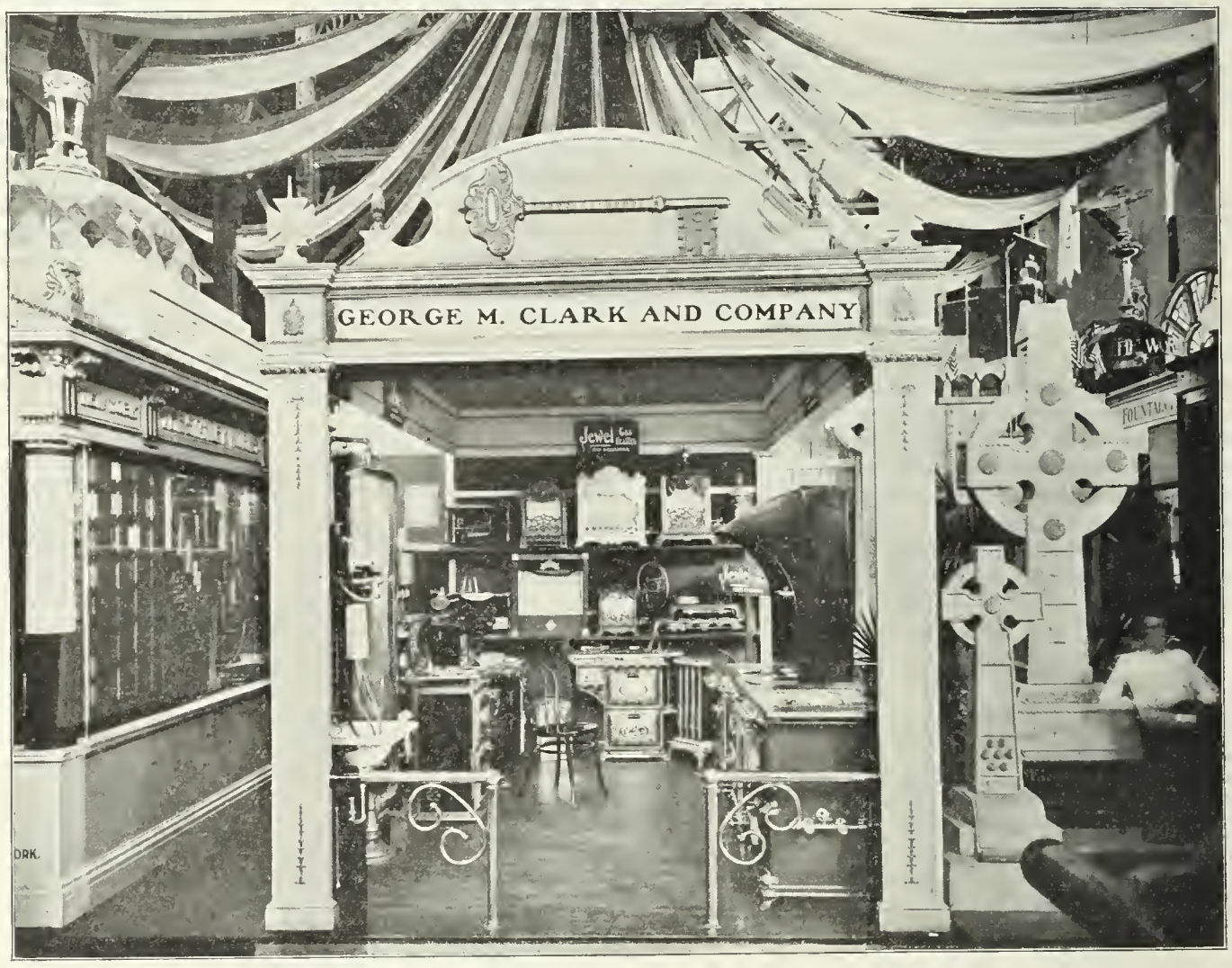
A little catalogue devoted to the P. P. Stewart range presents a picture of Mr. Stewart, who for 31 years gave his attention to perfecting and developing the celebrated Stewart stoves. This is a square portable range of handsome design, elaborately nickel trimmed and made with end ash pit, high shelf and reservoir. The oven is surrounded on five sides by flues to insure its heating, and has a heat indicator in the oven door. The Diamond Stewart is a range of similar attractions, while the Crown Stewart and the Model Stewart are ranges well calculated to meet the demands of a high grade custom trade. The Stewart Oak and the Splendid Oak are handsome examples of this popular form of heating stove, the Stewart Oak being also made with a double heating attachment for heating an upper room. The Matchless Oak, a stove of less elaborate ornamentation, will be recognized by the trade as an old favorite.

THE NEW HOME FURNACE COMPANY, Norwalk, Conn., are distributing circulars showing the New Home Furnace and the Rémond French Ranges.

George M. Clark & Co.'s Pan-American Exhibit.

An illustration is presented herewith of the exhibit by George M. Clark & Co., 72 to 76 Lake street, Chicago, at the Pan-American Exposition at Buffalo. The exhibit is located in the Manufactures and Liberal Arts Building. This exhibit is housed in a pavilion built on original designs and of very attractive appearance. Columns are arranged in front, which support a heavy cornice and architrave. The capitals of the columns are highly ornamental. A curved panel on the top of the front bears the company's trade-mark key, carved in relief. The exhibit is inclosed by a heavy railing of brass tubing.

This exhibit is stated to be the largest and best gas stove exhibit made at the exposition. It consists of instantaneous and circulating water heaters, gas ranges, gas heating stoves and gasoline stoves. All these goods are of the company's standard patterns and finishes, and have been selected to show the character and extent of their products, without the addition of any special decorations for the purpose of attractiug attention. Their new instantaneous and portable heater and all the gas stoves are connected for practical operation, natural gas being furnished by the exposition for this purpose. Visitors can thus observe the manner in which the heater and the gas stoves are operated. They are, of course, adapted to the use of manufactured as well as natural gas. The company have an attendant constantly in charge since the opening of the exposition, who has entertained many visitors and taken a large number of orders.



George M. Clark & Co.'s Pan-American Exhibit.

PRESIDENT CHARLES O. LYON of the Thatcher Furnace Company, 240 Water street, New York, is agaiu at his office, haviug returned from a sojourn of several months abroad, looking hearty and well prepared for the fall rush of business. Along with the company's new Rauge, Furnace and Boiler catalogues, and the extensions recently made to their plant at Newark, N. J., prompt shipments will be another iuducement to the trade to deal generously with the Thatcher line.

Royal Stoves and Ranges.

Bergstrom Bros. & Co., Neenah, Wis., display their customary enterprise and good taste in the fine new catalogue just issued, showing the numerous good things in tue stove line which they are presenting to the trade for the coming season. This catalogue comprises 88 pages. The engravings are considerably above the average found in trade catalogues, while the other features of the publication are such as to make it a worthy specimen of catalogue printing. They give the first place in this catalogue to the Iona line of steel ranges, designed for coal aud wood. This line, it is stated, has every desirable feature of modern steel range construction, and no expense in pattern work has been spared to produce a range of rich design and attractive appearance. This range is made in a great variety of sizes and is shown in all styles. The Falcon line of steel ranges comes next. This is a new four-hole range of the best material and workmanship, designed for hard or soft coal or wood, and is made in four sizes. The Hector steel range is a new four-hole range, also of high grade, designed for wood enly and made in four sizes.

The firm have brought out two patterns of steel cooking stoves, the Index, intended for coal and wood, and the Target, for wood ouly, each made in four sizes. A very fine assortment of cast ranges is shown, consisting ef the Pilgrim and Dresden four-hole ranges, for coal and wood, and the Linwood, Beacon and Arcade four-hole ranges, all for wood only. These ranges are illustrated in all the usual styles and are made in a sufficient number of sizes to meet the requirements of the trade. The cast cook stoves shown consist of the Pontiac and Idaho, designed for coal and wood; the Chippewa, Oregon and Record for wood only, and the Iron Duke, a large hotel and camp stove for wood or coal.

The heating stoves illustrated embrace constructions representing all the standard styles. They consist of the

Royal Elmhurst, an entirely new hard coal base burner, having a reflector top and profusely decorated with nickel; the Elmhurst surface burner for hard coal, which has long been a favorite with their customers; the Royal Oak, the Royal Rival, a new smoke consuming hot blast heater, intended for hard or soft coal or lignite; the Spark, direct draft for wood; the Royal Winner, a new line of air tight stoves for wood or coal, and the Emperor, a very large heavy box stove for wood or soft coal.

Gold Coin Stoves and Ranges.

The annual catalogue for 1901 of the Gold Coin Stove Company of Troy, N. Y., is just being distributed. It is 11 x 7½ inches in size, bound in a dark blue and bearing the Gold Coin trade-mark on the front cover. The usual greeting is extended to the trade, followed by special information in reference to terms, shipments and repairs. It is also stated that a liberal supply of advertising matter will be furnished those who sell the Gold Coin line. The first four pages of the catalogue are devoted to the Model Gold Coin, a high grade square range which is presented as entirely new for 1901. A feature of this range is the absence of too elaborate ornamentation, affording opportunity to contrast the design with the smoothness of the castings. It is provided with a handsome nickel name plate and attractive nickel ornamentation. The range is made with cabinet shelf, a high top shelf and a large reservoir and has an end ash pit. The fire box is equipped with a grate of the labor saving type, arranged to be removed through the ash pit door without disturbing the linings or the water front. The range is made with 18 and 20 inch oven, and with 6, 8 or 9 inch holes. It is followed by the Grand Gold Coin and Novel Gold Coin, which are large high grade ranges. The 394 series Gold Coin are made with both right and left-hand fire chambers and are provided with all of the usual conveniences of end ash pit, high shelf and reservoir. The Home Gold Coin is made with six 8-inch holes and oven 20 inches square, elaborately trimmed with nickel, designed to meet all the requirements of the trade for a low priced range. The Novel Gold Coin and the Home Gold Coin ranges are also made with four holes on the top. The Gold Coin range and the Gold Coin cooking stove with high shelf and reservoir are also shown.

The Gold Coin ventiduct base burner, a handsome square parlor heater liberally trimmed with nickel and having full mica illuminations, is designed for use as a single or a double heater. The Magic Gold Coin is another of the company's ventiduct base burners and is made in three different sizes. Their line of oak stoves includes the Twentieth Century Gold Coin, which has a large feed door used to effect a large illuminating front with reflector top. It is elaborately nickel trimmed and has a special form of ash pit hearth. This stove is made in three sizes, having 16, 18 and 20 inch fire pots, and it can be furnished with a magazine when desired. The Standard Gold Coin is a stove of very attractive design, but less elaborately ornamented, and the Gold Coin Oak is a substantial oak stove of the regular type. The Gold Coin wood parlor stove, made for burning 21 and 23 inch wood, is a heater of elaborate design, full nickel trimmed. An oval sheet iron air tight stove is also made bearing the name Gold Coin, also the Ajax, a box stove for burning wood from 18 to 36 inches long.

The Weir Stove Company, Taunton, Mass., are sending out a pretty booklet devoted to the Glenwood Hotel Range. It is bound in a light brown cover, having a design in green and yellow showing a hotel in the mountains. This Range is made of cast iron with a large fire chamber, provided with a water back extending across the back and partly along two sides, and has a triplex grate. Immediately above the fire is one large ring cover with four 9-inch boiler holes over each oven. The ovens are large and the doors are equipped with the Glenwood Oven Indicator. The Range is made with large flues, so that its operation is said to be certain. It has a high warming shelf and planished iron canopies are furnished for carrying the heat and odors from the kitchen.

ODD PLATES.

Francis Kernan of the International Heater Company, Utica, N. Y., is spending a few days in New York at 231 Water street, the office and salesroom of the Syracuse Stove Works, assisting C. W. Richards in the absence of Joseph Kernan, who is enjoying a vacation.

President John B. Jones of the Utica Heater Company, Utica, N. Y., was a recent visitor at *The Metal Worker* office.

W. H. Colebrook Sons & Co., Syracuse, N. Y., are distributing a desk blotter representing a baseball player in the attitude of soliciting judgment. Similarly the concern invite the trade to test so as to be able to pass judgment on Colebrook's Furnace Cement and Stove Putty.

The Outing Stove Company, Silex, Mo., are putting on the market two knock down sheet iron Camp Stoves that are light and readily carried, and which are said to bake and cook for a party of eight with little fuel of almost any kind and do the work quickly.

The Kirk-Latty Mfg. Company, Cleveland, Ohio, inform us that they have let the contract for the erection of another story to a portion of their factory, which will give them an additional floor space of 275 x 50 feet. They are also contemplating extensive improvements and enlargement to their office. The company make an extensive variety of Stove Bolts, Stove Rods and Stove and Tinsmiths' Rivets, besides a large line of Carriage and Tire Bolts, Tacks, special Nails, Machine Screws and Nuts.

The Girard Stove & Repair Company have been organized with foundry at Girard, Ohio, to make all kinds of Stove Repairs and small job work.

The Los Angeles Stove & Mfg. Company is the name of a concern who have been recently organized at Los Angeles, Cal., with a capital stock of $25,000. The directors include E. H. Knapp, W. F. Giles, J. M. Merritt, G. S. Porter and M. E. Porter.

B. B. Christie, Dayton, Ohio, has recently been granted a patent on a Natural Gas Hot Air Furnace which is also adapted for using oil for fuel. The Furnace was under test during the past winter, showing, it is said, a high efficiency. It is called the Gas King, and Mr. Christie is now prepared to contract with manufacturers to make the Furnace on a royalty.

The Culter & Proctor Stove Company of Peoria, Ill., resumed operations in all departments of their works on Monday, August 12, after a shut down of four weeks for inventory and repairs.

It is stated that J. D. Hanks has organized a stock company at Rome, Ga., for the manufacture of Stoves. We understand that the capacity of the new works will be 40 Stoves per day.

MICHIGAN RETAIL HARDWARE DEALERS' ASSOCIATION.

The sixth annual convention of the Michigan Retail Hardware Dealers' Association was called to order at 10 o'clock Wednesday morning at the Hotel Cadillac, Detroit, by G. W. Hubbard, president of the association. The formal welcome of the association to the hospitality of Detroit was extended by the Hon. W. C. Maybury, Mayor of the city, in an eloquent address, to which a felicitous response was made by the president.

The convention was attended by a good delegation of members and was regarded as a success. The association was shown to be in excellent condition and doing its work well. Merchants who are actively identified with the movement refer with enthusiasm to what is being accomplished, as the rights of retailers are beginning to be recognized and respected. At the same time the opinion is freely expressed that the principal usefulness of the State association is to support and strengthen the National, as only by such an organization can retail interests be so represented and unified as to insure their recognition by manufacturers and jobbers.

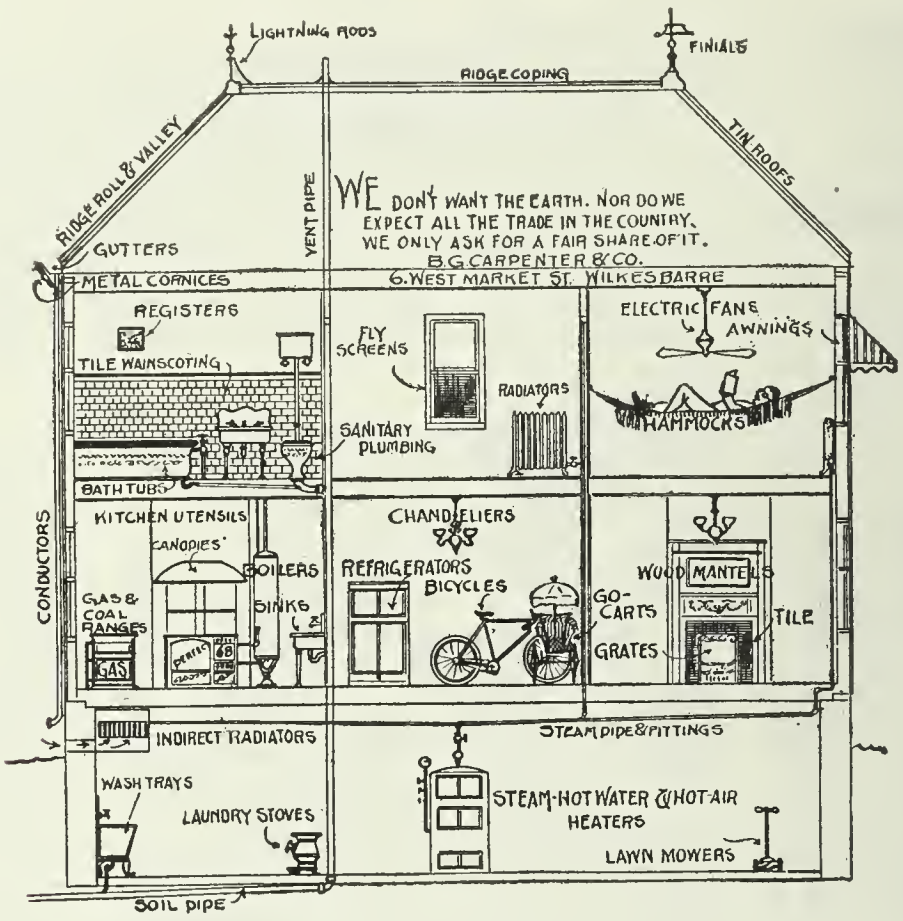
The National Association of Retail Hardware Dealers was represented by Irving A. Sibley of South Bend, Ind.

The report of the secretary, Fred. H. Cozzens of Detroit, showed that at the close of the last convention the association had a membership of 300. Since that time six had been received by mail. Of this number 179 have paid their dues up to July 1, leaving 64 in arrears for 1901, 16 in arrears for 1900 and 1901, and 47 who have absolutely withdrawn since the last meeting, which leaves the total membership, counting in all who have not absolutely withdrawn, 259. The financial statement showed a net credit balance of over $200 in addition to the convention collections.

Papers were read on "Credits and Collections," by R. J. Cleland of the Commercial Credit Company, Detroit and Grand Rapids, and on "Store and Window Dressing and the Best Methods of Keeping Stock in Order," by Henry C. Weber of Detroit, treasurer of the association.

A Unique Dodger.

Novel and effective advertising methods are of perennial interest to the wide awake retailer, consequently when anything fresh or striking appears in this line it is worth while making it known for the benefit of those whose bump of originality, perhaps, is not so largely developed as is that of the author of the novelty. The unique "dodger" which forms the accompanying illustration is one of these novelties. It is used by B. G. Carpenter & Co. of 6 West Market street, Wilkes-Barre, Pa., who inclose it in all their statements, letters, packages, &c., and who say they have found it an exceedingly effective trade getter. The cut is printed without other matter of any kind on a square piece of paper, 5 inches in size. The special point about it is that it is a self explanatory object lesson, pointing out the various lines of goods handled by the firm and applicable to the construction and equipment of the home from the cellar to roof cresting.



A Unique Dodger.

FRED. J. MEYERS MFG. COMPANY, Hamilton, Ohio, have issued a new illustrated catalogue showing various designs and styles of Nursery Fenders and Spark and Stove Guards. They are prepared to make to order any size or description of these goods.

National Enameling & Stamping Company.

The stockholders of the National Enameling & Stamping Company have voted to issue bonds to the amount of $2,500,000 of 5 per cent. bonds, which the St. Louis Trust Company have agreed to buy. On July 1, 1901, the total mortgage and floating debt of the company amounted approximately to $2,650,000, of which $525,000 is represented by mortgages which were upon two of the smaller plants of the company at the time they were acquired, and the balance of $2,125,000 represents bills payable. The proceeds from the sale of bonds, together with balance on hand, will satisfy all the obligations of the company and leave a surplus. The company have liquid assets consisting of cash, merchandise, bills and accounts receivable to the amount of upward of $5,200,000. Under the terms of the mortgage 10 per cent. of the entire issue of bonds is to be paid off annually at par. The business year of the company has been changed from January 1 to July 1, for the sake of convenience in stock taking and shutting down the mills. The cost of the steel plant and rolling mills at Granite City and St. Louis, now completed, and the extensions and improvements in the other plants of the company, for which no stock has been issued, amounts to $2,500,000. The steel plant and rolling mills were not completed and put into full operation until about six months ago. The report of the National Enameling & Stamping Company as of June 29, 1901, follows:

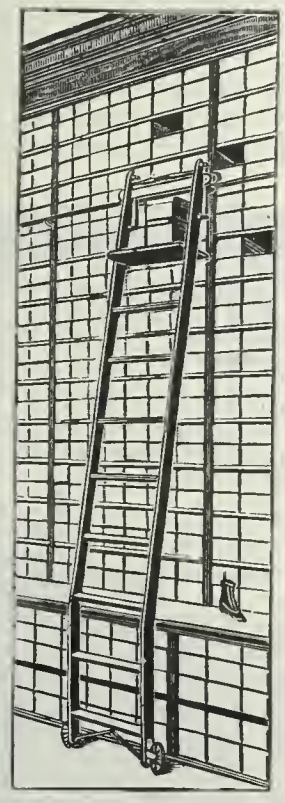
The results of the operations during the period show a profit of		$1,127,505.99
Out of which dividends have been paid on the 7 per cent. preferred stock, absorbing		817,068.00
Leaving a balance of		$310,437.99
Which added to the balance to the credit of profit and loss account, at December 31, 1899, of	$831,876.59	
Less sundry adjustments made during the year 1900, appertaining to the results of 1899	31,897.31	
		799,979.28
Makes the net surplus at date		$1,110,417.27

THE UNION MFG. COMPANY, Buffalo, N. Y., have a headquarters in New York City at 853 Broadway, where full information about the Union Grinders can be obtained from Charles McCutchen, their representative. These Grinders are well adapted to the use of Stove dealers, as they are run by foot power and the emery

wheels quickly remove the fins and burrs from castings. They are also convenient for grinding tools.

A New Milbradt Rolling Step Ladder.

The accompanying cut illustrates a rolling step ladder brought out by G. A. Milbradt & Co., St. Louis, Mo. Wheels rolling on a hard wood track are attached to the top of the ladder, the wheels being arranged to slide up and down, so as to allow the ladder to adjust itself to any unevenness of the floor, and also to permit the lower



A New Milbradt Rolling Step Ladder.

end of the ladder to be set in close to the shelving out of the way when not in use. The track is screwed to the edge of the shelf, even with the top, so as not to block up any space. The track is simply to guide the ladder. Wheels rolling on the floor are attached at the lower end of the ladder, but no track is used there. It is explained that the ladder is especially adapted to shelving not strongly built, as the entire weight of the ladder and of the operator rests on the floor; also that the ladder runs satisfactorily on a sloping floor.

The Rollman Apple Cutter and Corer.

The apple cutter and corer shown by the accompanying cuts is made with a frame of cast iron, tinned. The

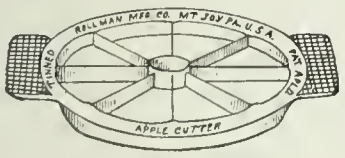


Fig. 1.—The Rollman Apple Cutter and Corer.

blades are securely soldered in so as to make a strong tool for the purpose intended. No. 7 cutter, the one shown in the illustrations, cuts apples into eighths and

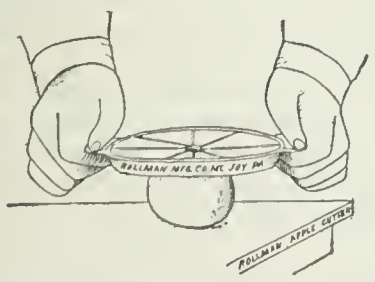


Fig. 2.—The Cutter Held on the Top of the Apple.

is designed for general use, while the No. 9, not illustrated, cuts apples into twelfths and is intended for the use of bakers and for pie baking. The Rollman apple-cutter and corer is shown in Fig. 1. Fig. 2 illustrates it held in position on top of the apple, preparatory to its being pressed down to cut and core the apple, as shown in Fig. 3. The device is put on the market by the Rollman Mfg. Company, Mount Joy, Pa., who are also man-

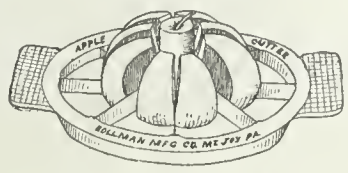


Fig. 3.—The Apple Cut and Cored.

ufacturers of the Rollman peach stoner, which is described as stoning freestone peaches without disfiguring or loss of juice.

Stove and Hardware Dealers.

E. A. Wood has bought the Hardware and Stove business formerly conducted by John Wood in Gifford, Ill.

The wholesale and retail Hardware, Stove and House Furnishing Goods stock of Farrar-Welshons Hardware Company, Pittsburgh, Pa., was damaged by fire a short time since.

Browder & Browder have succeeded Phelps & Miller in the retail Hardware, Stove, Tinware, Agricultural Implement and Sporting Goods business in Albion, Neb.

Davis, Hunt & Collister, Cleveland, Ohio, have incorporated their business under the style of the Davis, Hunt & Collister Company, with a capital of $65,000. The officers of the corporation are: E. P. Hunt, president; J. H. Collister, vice-president and treasurer, and E. L. Davis, secretary. The company do a wholesale and retail business in Hardware, Stoves, Tinware, Agricultural Implements, Sporting Goods, &c.

C. F. Thompson, Redwood Falls, Minn., has disposed of his Hardware, Stove, Sporting Goods and plumbing business to E. A. Pease, who will continue at the old stand.

J. F. Horn is successor to E. T. Booher in the Hardware, Stove, Tinware and Agricultural Implement business in Jerico, Mo.

Wm. H. Pollard has bought the Hardware and Stove business at Whittier, Iowa, formerly conducted by H. H. Mount.

Wadleigh & Fundis have succeeded Dorner & Wadleigh in the Hardware, Stove, Farm Implement and Sporting Goods business in Centralia, Kan.

Fuss & Harrison have lately engaged in the Hardware, Tinware and Agricultural Implement business in Perth, Kan. In the fall they are expecting to add the sale of Stoves.

F. D. Ross, retailer of Hardware, Stoves, Tinware, Agricultural Implements, &c., New Orleans, La., has been succeeded by F. D. Ross & Co.

James H. Johnston, Hardware, plumbing, &c., Washington, N. J., has just opened branch shops in Stewartsville, under the management of Fred. Boyd, and at Oxford, under the management of Albert Major.

Bernstock Brothers, Wrightsville, Pa., in addition to their Stove and Tinware business, have entered into a new line of trade. They have purchased the charter of, and are now operating, the line of boats plying on the Susquehanna River between Wrightsville and Columbia, Pa., and are reported to be doing a thriving business. Their new store in Wrightsville for the display of Stoves and Tinware has just been completed, and is a model of its kind.

The W. D. Parlin Hardware Company have been incorporated at Natick, Mass. The officers are: W. D. Parlin, president; Lloyd Brown, treasurer, and Richard Foley, clerk. W. A. Foley will be manager of the Framingham store, L. L. Howe manager of Builders' Supplies and H. R. Fittz manager of the plumbing department. Some of the men have been in the employ of the company from 12 to 35 years, and during the comparatively short time the Framingham store has been owned by Mr. Parlin the business has greatly increased.

THE BOILER TRADE.

The usual dull period, with all of its courage testing annoyances, has passed for this year, so far as the boiler trade is concerned. Reports from all sourees indicate that the movement of stock is well under way and that the outlook is brighter as the latter and better half of the year goes on its course. The best feature of the present situation in the trade is that the contractors, to a large extent, are satisfied, while the prices ruling bring a satisfactory return for the enterprise that has established this branch of trade on a popular basis. This is largely due to the frequent meetings of the boiler manufacturers and their agreement on a course that has been carried out and vindicated by the healthy tone apparent in the trade as a whole.

In spots there is evidence of sharp competition between those who are established and seek to hold their trade and those who are seeking trade and desire to gain a foothold. In such instances prices are sometimes quoted that are quite at variance with those generally prevailing; but no really serious inroads have been made. It is in order to suggest, however, that the threadbare custom of price cutting for the purpose of introducing goods should be abandoned and some more ingenious method be adopted that would benefit the whole trade. On the whole, prices of boilers have ruled firm and regular throughout the year, notwithstanding an energetic presentation of arguments for changes. Unless the demand for boilers should become manifestly in excess of the stocks in hand and the producing capacity, it is hardly probable that an advance in prices will be made. At the same time there is little likelihood of any recession from the present level of values.

RADIATION.

The movement in radiation is seldom in accordance with the conditions in the boiler trade, because much radiation is used in large buildings in which exhaust steam from the power plant is used for heating. Consequently a very different set of influences govern this trade. During the year many changes in prices have occurred, all the later movements having an upward trend. It is only a month since the last advance, yet a further advance of approximately 10 per cent. on all styles of radiators was announced on Wednesday of this week. There is a feeling in the trade that this is not the end and should the fall bring an overwhelming demand for radiation a further rise in prices is regarded as more than probable. Advances in the fall have not been uncommon in this branch of trade and contractors will do well to follow a course that will protect any bids they may make.

Already there are complaiuts that orders for specially popular goods, or for special sizes, are not shipped as promptly as has been expected at this season, and in some quarters this is taken as an indication of what may be expected later on. All the radiator plants are running, and during the year extensions and new equipment have been made to some that will substantially increase the producing capacity. When fully available these extensions may obviate any difficulty in securing radiation promptly at the hight of the season.

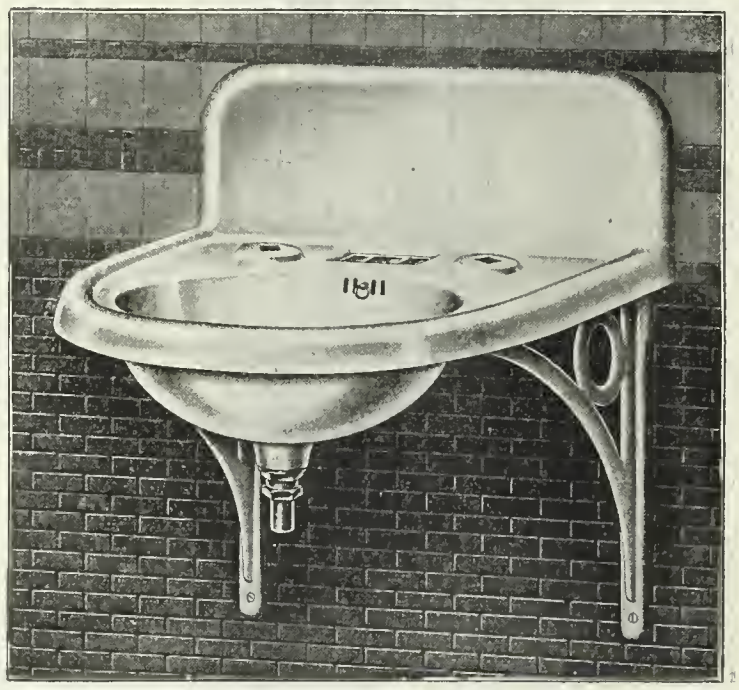
PIPE AND FITTINGS.

There has been a scarcity of pipe and fittings during the year, with prices ruling high as compared with a few years back and continuing very stiff. A new element of strength has been infused into the market by the strike among the steel workers, which is very likely to increase the scarcity of the smaller sizes of pipe and induce still higher prices.

This condition already has had the effect of shutting the steam fitters out of competition for heating smaller buildings, particularly residences, where heretofore they have had an even chance with the hot air furnace trade. It is pointed out by some contractors that the pipe alone for such jobs costs nearly double what it did some time since and with the advance in other fixtures the price which now must be put on such work often makes the consideration of a steam or hot water heating plant out of the question. Contractors, however, are sending in orders freely and seem to be well occupied with work on which they can compete successfully.

Enameled Iron Half-Circle One-Piece Lavatory

The Sanitary Enameling Company, Milwaukee, Wis., have just placed on the market their new line of patent enameled iron goods. An illustration is given herewith of their porcelain enameled iron half-circle one-piece lavatory. It has a countersunk slab and an oval basin. The size of the slab is 18½ x 21 inches; basin, 11 x 14 inches; hight of back, 8 inches; size of roll rim on the back, 1½ inches. This lavatory has a sanitary nickel plated brass soap tray, countersunk into the slab, directly above the overflow, into which all water from the soap drains, leaving the slab and basin perfectly clean. The tray can be easily removed, allowing the overflow chamber to be cleaned, making a thoroughly sanitary article. They have issued an illustrated circular, which gives illustrations of their oblong, half-circle and corner lava-



Enameled Iron Half-Circle One-Piece Lavatory.

tories, as well as of their porcelain enameled iron square kitchen sinks, which are made in 21 sizes.

A New Radiator Catalogue.

The third catalogue of the Fowler Radiator & Mfg. Company, Johnstown, Pa., which has just been issued, is a very fine example of the printer's art. It consists of 20 pages of enameled surface paper printed in two colors and bound in a gray cover bearing a design in lemon color with the address of company and two sections of the Solus radiator in blue. The introduction states that since their last catalogue was issued the capacity of the company's plant has been more than doubled and the equipment and facilities for shipment improved accordingly, while the capacity and quality of their goods are claimed to be second to none. A page is devoted to special instructions designed to avoid errors in ordering. The first half of the catalogue is devoted to the Solus, a three-column radiator of pleasing design made in all the usual hights and for use both as direct and semi-direct radiators. These radiators are furnished curved for bay windows and in all the usual forms. A view of the base for the semi-direct radiators is presented and also a table giving the size of fresh air inlet openings, one base being used for either back or bottom inlet. The last part of the catalogue shows some of the various styles in which the Imperial wall radiator can be furnished. This radiator is of handsome appearance and is designed to take the place of the wall coil so long in use. It is adapted for both steam and hot water work. Special ells are furnished for connecting the Imperial sections in bay windows of different angles.

J. J. KIMBALL, Philmont, N. Y., has the heating contract for the Reformed Church at that place, which is being enlarged and remodeled this season. He uses a Palace Regent Boiler.

The Climax Gasoline Gas Generator.

The Climax gas machine, made by the Climax Nut, Lock & Mfg. Company of St. Louis, has been accepted by the local board of the Underwriters' Association and now has the same privileges in the city as gasoline en-

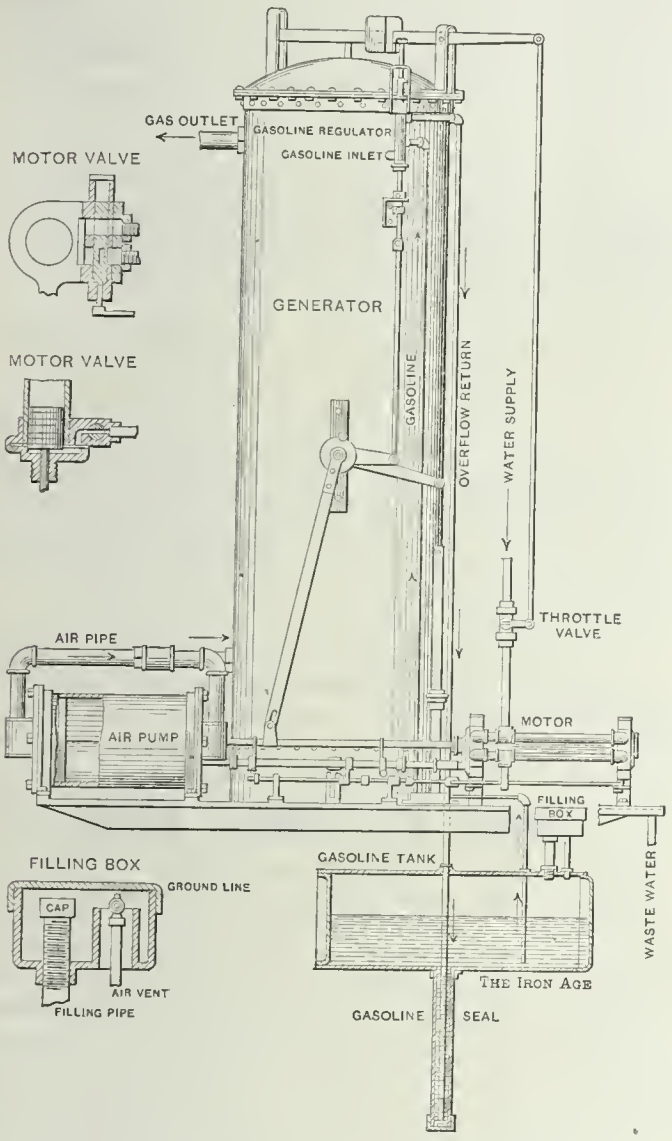


Fig. 1.—The Climax Gasoline Gas Generator.

gines. Heretofore this machine has been very much handicapped owing to the fact that the insurance companies would not permit its use, the objection being raised on account of the tank in which the gasoline was stored, no objection being made to the machine itself.

As will be noted from the accompanying illustrations the machine consists of two pumps, operated by either steam or water motor at ordinary city pressure. One pump takes gasoline from a reservoir and sprays it into the top of a large cylinder filled with excelsior, which serves as an absorbent material and furnishes an evaporating surface. The other pump forces air into the bottom of the cylinder and up through the mass of excelsior, which is just moistened with gasoline from the spray above. The air laden with gasoline vapor is forced to the top of the cylinder. The resultant gas is then piped off in the usual way. The pressure within the evaporating cylinder is automatically controlled and the relative amount of air and gasoline is also adjusted by varying the stroke of the gasoline pump. The arrangement is such that gas is only generated as it is used. Should a 200-light plant be in full operation and all at once 199 of the lamps be turned out the machine would stop until the one lamp left burning had consumed the excess of gas before it automatically started itself again.

Prof. F. S. Nipher of Washington University, St. Louis, has made a thorough test of this machine. In the course of his report he states: "The gasoline was continually pumped from the bottom of the reservoir and the evaporation was always complete. No liquid gasoline could ever be drawn off at the bottom of the evaporating cylinder. The gas was very uniform in quality and the operation of the entire plant was very satisfactory.

"In making the time tests one lamp only was used. This is a disadvantage which is against the plant, as losses from leakage would have been no greater if the plant had been worked to its full capacity of 250 lamps. The candle-power of the lamps was measured against a 16-candle incandescent lamp, which was from time to time standardized by means of English sperm candles. The voltage of this lamp could be very accurately set so that it gave a fixed and known candle-power. The lamps were tried with various mantles, and the candle-power could easily be raised to 275 candles. This was done by increasing the pressure by means of the sliding weight on the lever controlling the water supply. The lamps were usually at 75 candles. By increasing the pressure the candle-power was run up to 385 candles.

"One run lasting for several hours with the plant at its full capacity was made. There was no appreciable lowering of the temperature of the cylinder in which the evaporation takes place. It is found that mantles used in the flame of this gas do not deteriorate with use, as they do with city gas. One mantle was used during the two months' test, and at the close it was in good condition. It was not injured by laying it upon its side upon the hand. It was much more elastic than mantles used in city gas. For this reason such mantles can be used in this gas under a much higher pressure

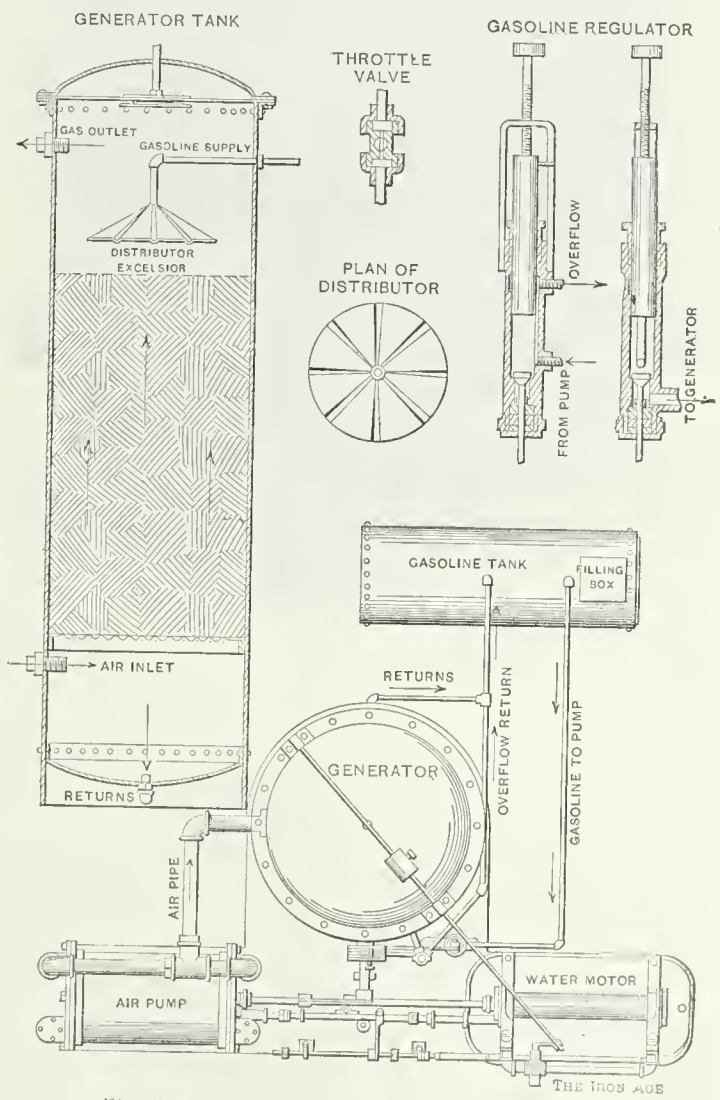


Fig. 2.—The Climax Gasoline Gas Machine.

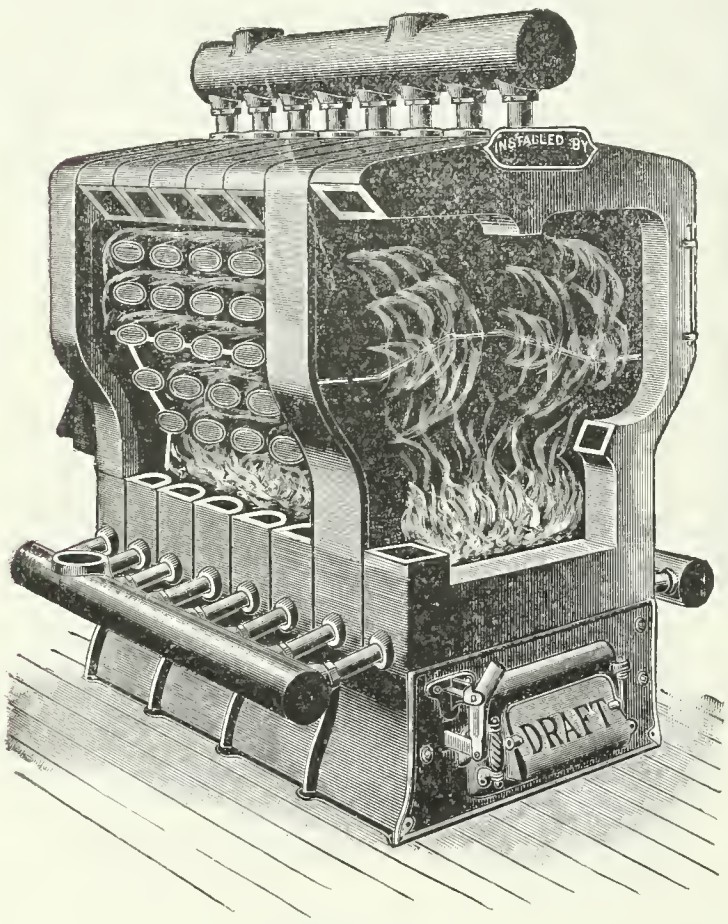
than would be feasible with city gas. When burning a single 75-candle lamp it was found that 1 gallon of gasoline would last 55 hours.

"The gas from this machine was also examined for heating purposes and found to be very satisfactory. The combustion is complete and the heat required for cooking and for use in combustion furnaces can be easily attained."

WILLIAM ARNOT, plumber and steam fitter, of Carthage, N. Y., has just closed a contract for heating Lyman Dunlap's new business block in that city with steam, using a No. 8 Carton C Boiler. Mr. Arnot reports a good trade also at his shop at Thousand Island Park.

The Imico Boiler.

The Illinois Malleable Iron Company, 30-32 West Monroe street, Chicago, Ill., who are well known to the heating trade through their special pipe fittings, are entering upon a more extensive field and have brought out a line of new steam and hot water heaters bearing the name Imico. The boilers are of the vertical sectional type having return flues and the screw nipple is used for connecting the sections. In the construction of the sections the crown sheet is raised to the bottom of the third inclined waterway so that a large fire surface is presented and the upper flues are arranged to secure a fire travel that will economize heat and thoroughly heat the water in the upper part of the boiler or steam chamber. The sections give an increased width to the boiler above the fire chamber and thus provide ample flues and preserve a proper proportion between the fire and the flue surface in the boiler. In the large sizes the sections are made in two halves connected at the top with a sunk



The Imico Boiler.

header from which the flow pipes are taken. A return header is used at each side at the bottom.

A substantial cast iron base made in sections supports the sections and also contains a shaking and dumping grate made open to allow the air to enter the fire freely to promote combustion and with two sets of levers in the large sizes each working one-half of the grate. The boilers are provided with check drafts and the ash doors are made with lift dampers adapted to thermostatic control of the fire so as to maintain an even temperature in a building. The boilers are equipped with grates 24 and 36 inches wide in 18 sizes rated to carry from 750 to 6400 square feet of direct hot water radiation and 475 to 4000 feet of steam radiation, the mains to be counted as radiation. Large doors are provided, those giving access to the flues facilitating the work of cleaning them. A new catalogue has been prepared giving views of the different sections of the boilers, and all the dimensions needed by the steam fitter to prepare for setting them.

The National Pipe Bending Company, New Haven, Conn., manufacturers of National Feed Water Heaters and Coolers and benders of pipe, have awarded the contract for the construction of a two-story brick addition, 100 x 60 feet, to their plant. The building is intended for an addition to the brass and copper coiling department, and will cost about $15,000.

New York City Notes.

The Outing Committee of Manhattan Branch of the Master Plumbers' Association have made final arrangements for the games to be held August 28. These will include a 100 yards dash, fat men's race of 100 yards, limited to those over 195 pounds in weight, a two-hour fishing match, 200 yards swimming match, shooting match, quoit pitching, baseball, football, Celtic rules, tug of war between New York and Brooklyn, and a boat race. Good and substantial prizes will be given by the committee.

* * *

If Wardman Bissert, lately convicted of bribery as a police officer, had stuck to plumbing, which trade he learned in the shops of F. Ehrhart, he would not be in the uncomfortable position he occupies to-day.

* * *

Trade still continues brisk, with trouble in getting certain lines of material.

* * *

Manhattan Branch is making a fight against unlicensed plumbers and has several cases now in court. The Law Committee has divided the city into districts, with sub-committees in each district, to further this work and, upon investigation of the cases submitted, is taking up the prosecution of the offenders.

* * *

Rockaway is the summer resort frequented by the plumbers and enough members can be met on the morning trains coming from there to more than make a quorum at a meeting.

Heating and Plumbing Notes.

The International Heater Company, Utica, N. Y., are distributing a series of six cards, any one of which should make a lasting impression on the prospective purchaser of an Acetylene lighting apparatus. They are issued in the interest of the Drake Acetylene Gas Generator and extend an invitation to get the company's Catalogue D, devoted to this apparatus. The cards are illustrated and tritely worded "A Tank Full of Sunbeams," "Artificial Sunlight," "We Sell Daylight," and "Night Radiante" are a few of the phrases used. They are well calculated to aid those who are canvassing for the sale of Acetylene Generators and should be popular with the trade.

A. D. Naylor & Co., Oakland, Md., have secured the contracts for heating by steam the public school building and the Ravenscroft Block at Oakland, Md. They will use the American Boiler.

The Metal Worker acknowledges the courtesy of an invitation to attend the Rhode Island Master Plumbers' Association outing at Hauterive, East Providence, August 13.

An announcement which will be of especial interest to the plumbers' trade and other users of Chain is that made by the Bridgeport Chain Company, Bridgeport, Conn., of the placing on the market of an Alloyed-Aluminum Chain. The Chain, it is claimed, has the required strength and is finished with a surface resembling silvered brass and will not rust. The price is the same as for brass, and as compared with nickel, for which it is used as a substitute, it is cheaper. Its advantages are obvious for tank chains, wash trays, bathtubs and similar purposes.

James Gallagher, Allentown, Pa., has the contract for heating the hotel of the Hon. H. E. Crilly and will use a No. 703 Bright Idea Steam Boiler. The plant has been designed on the vapor system of steam heating, using the apparatus of the Vapor Steam Heater Company of York, Pa. The order for the Boiler was placed at 111 Fifth avenue, the New York office of the Gurney Heater Mfg. Company of Boston, Mass.

Myers & Mahoney, Portland, Maine, bid $1582 and secured the contract for plumbing a public bath establishment in that city. There will be eleven shower baths and a wash bowl put into the auditorium basement, connected with two boilers each of 500 gallons capacity. There will also be a water closet.

JOSEPH WRIGHT of the firm of Bennett & Wright, dealers in plumbing and steam goods, Toronto, Canada, who has recently returned from a trip abroad, reports the plumbing on the European Continent to be very much behind Canadian plumbing and that of England at least 25 years behind.

THE annual convention of the United Association of Journeymen Plumbers, Gas Fitters, Steam Fitters and Fitters' Helpers of the United States and Canada will be held in Buffalo, N. Y., from August 19 to 25. There are 260 local associations affiliated with the United Association, with a membership of over 15,000. There are locals in Havana, Cuba, Canada and Honolulu, besides those in the United States. The first convention of the association was held in Washington on October 11, 1889, and the body has met annually since then. The arrangements for the Buffalo convention give the delegates plenty of time to visit the exposition. The indications are that the attendance will be much larger than at any previous convention of the association.

W. E. MAHONEY, sanitary and heating engineer, Hartford, Conn., is overhauling the hot water heating of a block on Florence street for Harvey & Lewis. He is also heating with a Princeton Hot Water Heater, made by the J. H. McLain Company, Canton, Ohio, J. M. Ney's block on Asylum street, and has the heating of a house on Vernon street for Dr. Griswold. Among his other contracts is one for overhauling the plumbing in the residence of Amos Whitney on Farmington avenue. Mr. Mahoney has just taken the agency for the Bruce Acetylene Gas Generator.

C. L. GRANT, Hartford, Conn., contractor for artesian wells, has recently completed a 6-inch well for D. F. Burns, which is 263 feet deep, with a supply of 20 gallons per minute; also a well at Goodwin Park 250 feet deep, both of which flow above the surface of the ground. Mr. Grant has just commenced work on a well for St. Andrew's School at Salisbury, and also one for the Aislie Mills, at Hanover, Conn.

THE heating by hot air of the new Spencer Borden, Jr., residence at Interlachen has been let to John Dixon of Fall River, Mass., who will use a Glenwood Furnace made by the Weir Stove Company of Taunton, Mass.

LAW & HAWXHURST, Providence, R. I., are installing independent gas and electric fixtures in two new fire stations on Douglas and Laurel Hill avenues, in that city. They are also placing combination fixtures in the new residence of Daniel Burrows.

"MODERN BATH ROOMS," is the title of a beautifully designed and artistically executed book issued by the Standard Sanitary Mfg. Company, Pittsburgh, Pa., printed on fine enameled paper with embossed cover. It is intended for the use of home builders or those about to remodel their present dwellings. In addition to this it is equally valuable to contractors in enabling them to make quick calculations as to the expense of sanitary equipment.

THE contract for the heating plant at Simpson College, Indianola, has been let to the Cutler Company of West Grand avenue, Des Moines, Iowa.

A LARGE contract has just been secured by E. R. Clark, Hartford, Conn., for Aermotor Wind Mills, Tanks, &c., to erect two 10,000-gallon cypress water tanks on 30-foot galvanized steel towers in connection with the new Tuberculosis Hospital on Cedar Mountain. He has recently set up an Aermotor Wind Mill and 3000-gallon Tank on steel tower at the Retreat Farm on New Britain avenue, Hartford, and a Denney Improved Ericsson Hot Air Pumping Engine and Tank on steel tower at the Retreat Cottage on Cedar Mountain; also a similar plant for the Fenwick Golf Club at Fenwick.

BIDS will be received until August 19 by C. H. Dudley, Hallowell, Maine, for a hot water heating plant for a new dormitory at the Maine Industrial School for Girls.

A LARGE steam heating plant for the Pennsylvania Training School is being erected near Elwyn Station, Media, Pa., from which pipes will be laid in a system of tunnels to the different buildings. This will save the hauling of coal up a steep incline, which has always been a matter of heavy expense. Jos. C. Seal of Media has the contract.

THE Board of Supervisors of Redding, Cal., will receive bids until September 7 for a heating and ventilating system for the High School Building at that place.

THE plant of the Iowa Mfg. Company, Oskaloosa, Iowa, was destroyed by fire on August 15. The loss was partly covered by insurance. The plant will be rebuilt at once and orders for heating and plumbing supplies will be shipped at an early date. The company's Soil Pipe plant is expected to be in partial operation by September 1.

A PLUMBER of Hudson, Mass., who was arrested some time ago on complaint of the Board of Health for not observing the regulations of the board, was discharged by Judge McDonald. The complaint stated that the plumber did not have his plumbing tested. In giving his decision in favor of the defendant, Judge McDonald said that the laws passed by the Legislature did not give Boards of Health power to make rules without authority from the town.

GEORGE W. MINOR, Waterbury, Conn., will shortly move his plumbing and heating business to new quarters in the fine new block which is being erected at the corner of Bank and Grand streets, where he will occupy two stores, as well as the second floor, which will be utilized as a work shop. It will be equipped with an elevator, &c. Mr. Minor has just completed the plumbing of the new residence of C. N. Hall on Buck's Hill and has the heating of a new house in Waterville for George L. Jenks, and the plumbing of a three-family house for C. H. Percy.

L. H. & C. D. TOWNSEND, Oneonta, N. Y., are at work putting two large Carton Boilers in the Court House at Cooperstown, N. Y. A feature of this job that is a little unusual is the carrying steam from this building 100 feet underground to the new County Clerk's Building to heat that also. The firm have also a contract for heating a residence at South Kortright, using a Palace Regent Boiler.

THE NEVIN'S IRON WORKS, Lowville, N. Y., have just finished equipping the County Buildings at that place with a modern steam laundry. This is probably as complete an outfit as can be found in Northern New York They are now at work upon the installation of a heating plant in the Asylum and County Building. This requires two large Carton C Boilers.

THE NATIONAL TUBE COMPANY'S foreign shipments of Iron Pipe, made through Eastern ports during July, aggregated over 4500 tons, as against some 1650 tons shipped in June. The heaviest shipments went to Europe, where nearly 3000 tons were forwarded. The Pipe was sent to Belgium, Holland, Germany, Italy, Denmark, Norway and Great Britain. Australia took over 500 tons, and Mexico, South Africa, South America, India and China received the balance.

THE LUDLOW VALVE MFG. COMPANY, Troy, N. Y., have nearly completed a large extension to the foundry and machine shop, which will increase the present capacity about one-quarter. When finished employment will be given to about 100 more men, increasing the force to about 500 men.

A CONTRACT has been made by the School Board of Camden, Maine, with the Fuller-Warren Company of Boston to put a ventilating system into the Elm Street School House and give also additional heating facilities.

THE Board of Directors of the Rapides Hotel, Alexandria, La., have contracted with C. W. Smart of Carbondale, Ill., to put in a steam heater in the building, to cost $3000.

H. T. ROWE, Reading, Pa., has received the contract to equip ten houses, erected by Deem Bros., with all of the latest improved nickel plumbing and other improvements. Besides the above he is finishing seven houses for Jacob B. Schaeffer and placing the hot water system of heating in 24 houses erected by Rehr & Hinnershitz in Reading.

A CORRESPONDENT at Norfolk, Va., calls attention to an erroneous item printed in these columns last week to the effect that a plumber of that city had lost a suit

bronght by him against the master plumbers of Norfolk on the charge of maintaining a "trust" and applying a boycott to the damage of his business. The suit in question was not brought against the Master Plumbers' Association of Norfolk, but against the local Sheet Metal Workers' Association, the complainant having no grievance against the plumbers. Verdict was rendered in favor of the defendants.

THE summer meeting of the British Institution of Heating and Ventilating Engineers was held at Dublin, Ireland, July 23 and 24, at the home of the president, W. R. Maguire, who is a member of the American Society of Heating and Ventilating Engineers. The president's address was a broad discussion of the field of the heating engineer and what had been done in it by societies. It was the most important paper of the meeting, as some of the technical papers were held over until the next meeting in London. At the dinner given by the Irish members D. M. Nesbit proposed a toast to the American Society of Heating and Ventilating Engineers, which was replied to by R. E. Atkinson. Both of these gentlemen are members of the American society and have many friends in this country.

THE Department of Public Safety of Pittsburgh, Pa., has sent to every architect and plumber in the city a copy of the new law relating to the examination and licensing of plumbers. This law places additional restrictions on the plumbers' trade. Detailed plans of all house work must be filed with the Bureau of Plumbing and House Drainage, and the law specifies, in a general way, the manner in which all work must be done.

IRVING & BATEMAN, Philadelphia, Pa., will install an $18,000 high pressure water tube boiler plant and steam heating and ventilating apparatus at John Stafford's new $250,000 apartment house at Thirteenth and Walnut streets. They will also put in a heating system at the Friends' Meeting House, Main and Coulter streets, Germantown.

New Firms and Changes.

THE GENERAL LIGHTING APPLIANCE COMPANY of St. Louis, Mo., have been incorporated, with a captal stock of $10,000, by Gustav E. Pleus, Alfred E. Einstein, Fred N. Eckerle and Jos. Ross.

L. W. LYON has purchased the entire stock of plumbing materials and tools of G. R. Thorley, Atlantic, Iowa, and, in association with his father, will open a plumbing shop at Fourth and Chestnut streets.

Jos. B. GANTZ has gone into the plumbing business on East Main street, Mt. Joy, Pa.

THE MUTUAL GAS REGULATOR COMPANY have been incorporated, with a capital of $20,000, at Baltimore, Md., for the manufacture of Gas Saving Appliances, by John H. Cann, C. E. Cole, G. W. Myers and others.

THE WHITNEY PLUMBING COMPANY of St. Louis, Mo., have been incorporated with a capital stock of $3000. Henry Whitney holds 3 shares, Arthur E. Whitney 13, Cornelius V. Whitney 13 and John H. Curric 1 share.

Artificial Leather.

United States Consul-General Hughes, at Coburg, Germany, reports that, according to the German press, fibroleum, a new artificial leather, has just been invented by a Frenchman. It consists of pieces of refuse skins and hides, cut exceedingly small, which are put into a vat filled with an intensely alkaline solution. After the mass has become pulpy it is taken out of the vat, placed in a specially constructed machine, and after undergoing treatment therein is again taken out and put through a paper making machine. The resulting paper like substance is cut into large sheets, which are laid one upon another, in lots from 100 to 1000, and put into a hydraulic press to remove all moisture. The article is strong and pliable, and can be pressed or molded into all kinds of shapes and patterns. It is said to make the best kind of wall paper. Decorators who have used this article speak of it in the highest terms.

FLASHINGS.

THE JACKSON IRON & TIN PLATE COMPANY of Clarksburg, W. Va., whose incorporation was recently referred to, have selected a site and completed arrangements to build their plant.

THE CARNAHAN STAMPING & CAN COMPANY of Canton, Ohio, were recently incorporated under the laws of New Jersey with a capital of $300,000, for the purpose of rolling, stamping, tinning and enameling all kinds of metal. The incorporators are Edward A. Langenbach, Millard F. Taylor and Wm. M. Blecker.

THE new tin mill at the plant of the Lalance & Grosjean Mfg. Company, Harrisburg, Pa., has been started up. The plant now contains four tin and one sheet mill. Enough orders are already on hand to keep the entire works busy until January next.

THE HEEKIN CAN COMPANY of Columbus, Ohio, have been incorporated, with a capital of $100,000, to manufacture all kinds of Tin Cans. The company will be operated independently of the combination and will employ about 100 men. They have acquired a factory building 70 x 200 feet at Third and Lock streets, and will equip it with the most improved machinery.

N. M. CARTIER & SONS, Providence, R. I., have a large number of Gravel Roofing contracts on hand, including the Sacred Heart School at Pawtucket, 75 squares; car barns at Plancow and Rochester, N. H., 105 squares each; school house in Rochester, 85 squares; Rhode Island State Armory at Westerly, 40 squares; City Hospital, Newport, 40 squares; Hicks Boiler Works, 85 squares, &c.

A REPORT from Monessen, Pa., says that an addition is to be made to the American Tin Plate Company's plant at that place, which will enlarge the works from 12 to 24 mills.

THE TOWNLEY METAL COMPANY, Walnut and Second streets, Kansas City, Mo., in a little folder they are sending to the trade, call special attention to the T. M. C. Old Style Treble Coated Terne Plates. These Plates are made specially for the concern from high quality American soft steel and are double dipped by hand process, being given a very heavy coating, amounting, it is claimed, to 20 per cent. of the total weight of the Plate. A view of the company's new building is presented on the front page.

ISAAC S. SHREVE. sheet iron and metal worker, Tacony, Philadelphia, Pa., has just completed extensive additions to his store and dwelling. An additional story has been put on the building and other improvements to facilitate business have been made.

THE PROVIDENCE CORNICE COMPANY, Providence, R. I., have the contract for the Cornice work and Skylights on the Brown University Administration Building and the metal work for the two car barns which Maguire & Penniman are building in New Hampshire. They have also the contract for the Sheet Metal work for 20 houses which A. C. J. Leonard is building in Mapleville.

THE POPE TIN PLATE COMPANY of Pittsburgh have applied for a charter under the laws of West Virginia, with a capital of $500,000. The incorporators are Charles E. Pope, Frank B. Pope, E. W. Mudge and John F. Kraft, all of Pittsburgh. The new concern propose to build a Tin Plate plant, but their plans are not yet fully defined.

SOME Pittsburgh capitalists have organized the Carnegie Sheet Steel Company, and will build a plant at that place for the manufacture of Sheets. It will probably be a four-mill plant, and work is to be pushed as fast as possible. The directors of the new company are Robert G. Gillespie, W. H. Skivington, D. R. Torrence, Joseph R. Paull and T. Bissell Everson. Some of these parties are connected with the Carnegie Tube Company, who are building a Tube mill at Carnegie.

C. W. HUNT, for some years with the Youngstown Specialty & Mfg. Company, at Youngstown, Ohio, who were taken over by the American Can Company, has gone to San Francisco, Cal., to take charge of the Western plants of that concern.

Patterns for Ship Ventilating Cowl.

We are in receipt of the following very interesting article on the subject indicated from M. H. Cilley of the Mare Island Navy Yard, California:

I recently read an article in the June number of *Marine Engineering* by Mr. Stanley on "Standardizing Ships' Ventilating Cowls," and having seen nothing in *The Metal Worker* along these lines, I would like to submit what we term a standard cowl for the consideration of those of the readers likely to be interested in such matters. This cowl, I believe, is better proportioned and can be cheaper made than the style referred to as laid down by Mr. Stanley. The method which I use to establish the outline of the cowl is, I believe, original, with the exception possibly of the radius of the throat, which is determined in exactly the same way as by Mr. Stanley. This method is explained in connection with Fig. 1 as follows:

We start by erecting a line perpendicular to the base line from point A, extending it indefinitely. The diameter of the base, assuming it to be 14 inches, is marked off to the right of this line, establishing point B. The radius of the throat is next determined by taking one-fourth the diameter of the base, or 3½ inches, which is marked off on the base line to the right from point B to point C. From C erect a line with an inclination to the right of 82 degrees from the base line. With one leg of the dividers at C and with radius 3½ inches, or B C, draw the throat line until it intersects the inclined line at point D. The mouth of the cowl is laid off on the inclined line from point D, and is found by taking twice the diameter of the base, which gives us 28 inches. With this distance from point D we establish point E. We are now ready to draw the radius of the back, which is taken as one and one-half times the diameter of the base, in this case 21 inches. With this radius and one leg of the dividers at point E, the other should be so located that when the arc defining the back is drawn the vertical line, erected from the base line at point A, will be tangent to it. We now have the outline of the cowl complete.

This method, in the form of a formula, assuming B to represent base; T, throat; M, mouth, and R, radius of back, would read: B = 14 inches; T = ¼ B, or 3½ inches; M = 2 B, or 28 inches; R = 1½ B, or 21 inches. The back and throat lines are now divided into four equal parts and these points connected by lines, as in Fig. 2, thus dividing the surface into four sections, each section of which is developed by triangulation. The development of one section will serve to show the method employed in all.

To avoid confusion of lines we will transfer the bottom section, as in Fig. 3, where A G and 1 7 represent the section. Bisect A G and 1 7, and with these points as centers draw a semicircle on each side, which will represent a half plan of each end of the section. Divide these semicircles into a convenient number of equal parts, in this case six. Project these points to the elevation by lines in the semicircle A G. Letter these lines A, B, C, &c. Now to avoid confusion in the semicircle 1 7 number the lines 1, 2, 3, &c. Divide the elevation into triangles by connecting 1 and B, B and 2, 2 and C, C and 3, 3 and D, and so on, until all the points have been connected. Beginning with the line 1 A, letter and number each line, as B′ 2′, C′ 3′, D′ 4′, &c. At any convenient place draw a straight line and erect a line perpendicular to it. Take the length of the line B′ and transfer it to this line, as shown, and likewise take the line B in the plan and transfer it to the base line, as in Fig. 4. By connecting these two points we now have a right angled triangle, and the hypotenuse, or line B², is the true length of B′ in elevation. We now erect another perpendicular line and transfer the length of the line marked 2′ to it, as shown. Take the length of the line 2 in plan of small end and transfer it to line B in plan of large end. Take the difference in length of these two lines and mark it off on the base line from the intersection of the perpendicular line, as at 2 B. Connect these two points and we have another right angled triangle, of which the hypotenuse, or line 2², is the true

Fig. 1.—Elevation in Outline.

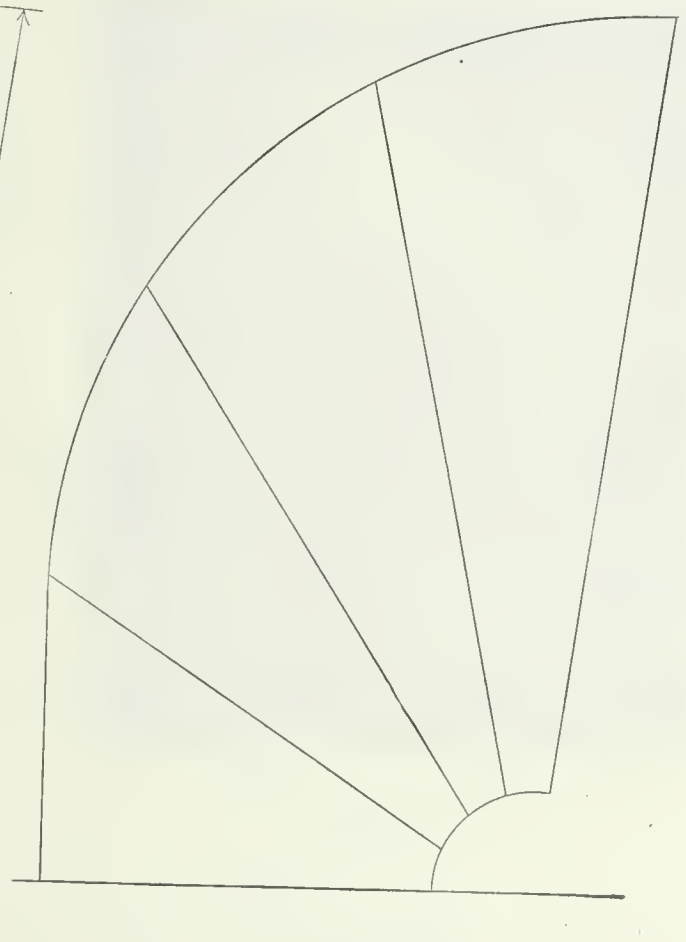


Fig. 2.—Showing Divisions of Cowl.

PATTERNS FOR SHIP VENTILATING COWL.

length of line 2′ in elevatiou. This process is now repeated by erecting another perpendicular and transferring the leugth of line C′ to it, and taking the difference in length of lines 2 and C and transferring it to the base line as before. The points beiug connected, we have another right angled triangle, the hypotenuse, or C^2, beiug the true length of C′ iu elevation.

This process is repeated until all the true lengths of the different triangles have been found, after which we are ready to proceed with the development of the pattern. Accordingly, in any convenient place, draw a liue of indefinite leugth. On this line lay off the distance from 1 to A in elevation, this being the true length of the center line. Next, with the poiut A as center and

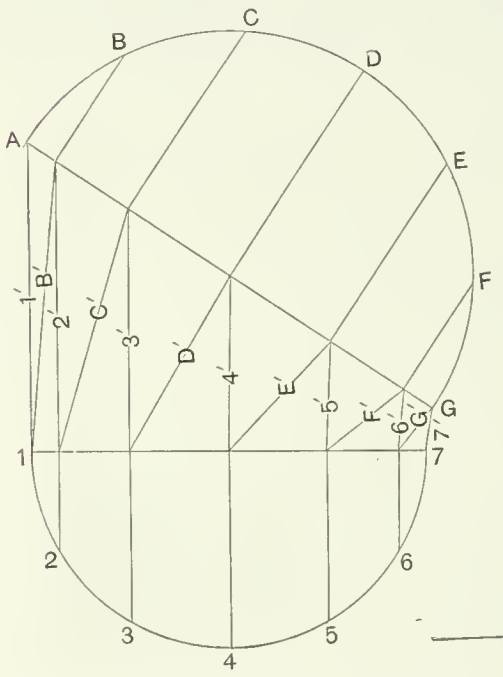


Fig. 3.—Development of One Section.

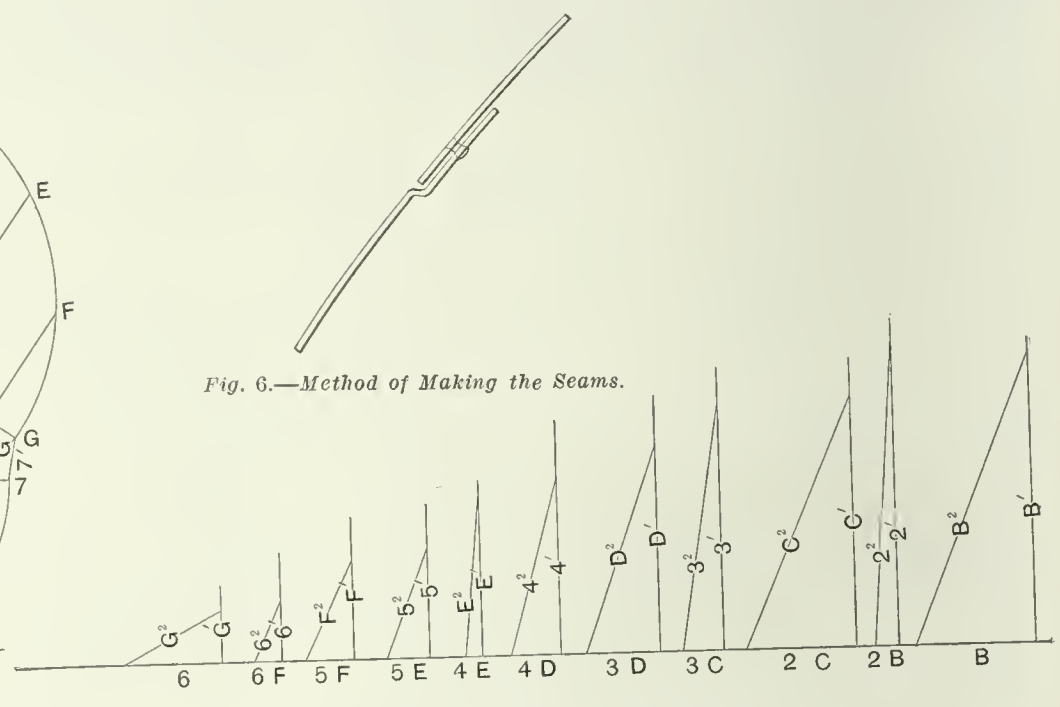


Fig. 4.—Determining Lengths of Lines in the Elevation.

the top of one section will be smaller than the bottom of the next, so as to allow them to be assembled without too much stretching.

The cowls we have made have been raised with a raising hammer until the center line at the back formed a true arc, gradually diminishing each side of the center. We also countersink the rivets and make the seams as shown at Fig. 6. The seam is soldered on the outside and the surplus solder scraped off, which leaves the cowl perfectly smooth outside, while the three seams iuside have a tendency to reinforce and stiffen the cowl. It is also further reinforced by finishing around the mouth with a suitable sized bead iron, the rivets being countersunk to conform to the rest of the cowl.

Fig. 6.—Method of Making the Seams.

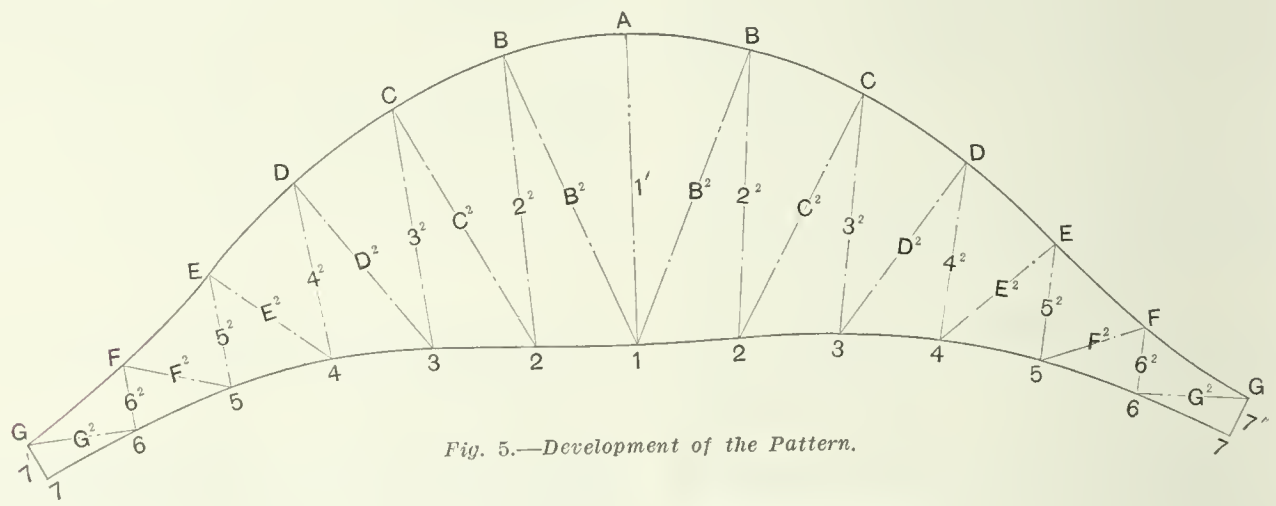


Fig. 5.—Development of the Pattern.

PATTERNS FOR SHIP VENTILATING COWL.

with a radius equal to one of the spacings in the large semicircle, or half plan of top, as A to B, describe an arc of indefinite length. Then, with a radius equal to the length of the hypotenuse of the triangle that represents the true length of the line B′, as at B^2, and with 1 as center, intersect the arc, as at B. Then, with 1 as center and radius equal to 1 2 in plan, describe another arc and intersect, as at 2, with a radius equal to the hypotenuse of the next triangle, using B as center. This process is repeated until the true lengths of all the triangles have been used, finishing with the liue G 7 of elevation, which is showu in its true length in that place. A liue traced through these points gives us the development of the required pattern, minus the necessary laps.

This line is termed the rivet line, the necessary holes being laid off on it. Considerable care is necessary in the spacing of these holes iu the different patterns, also in transferring the different sections, due allowance being made for the thickness of material. Consequently

The material which we use is galvanized steel. We find this to be much superior in regard to lasting qualities to planished iron or black steel.

I also inclose two photographs, Figs. 7 and 8, showing an exceptionally large cowl that we made some time ago, the diameter of the base being 37 inches, and consequently the mouth was 74 inches. Owing to our having no sheets larger than 36 x 96 inches we departed from our rule of four pieces, as will be noticed from an inspection of the pictures.

The New Castle Stamping Company, New Castle, Pa., recently organized, have selected a site on which to build their factory. The building will include an enameling department 80 x 300 feet, a machine shop and stamping department 80 x 206 feet and a pickling house 50 x 75 feet; also a boiler house and a number of small buildings.

RETAIL STOVE AND SHEET METAL WORKERS' ASSOCIATION OF NORFOLK, VA.

In our issue of June 15, 1901, reference was made to a suit that had been filed in Norfolk, Va., by W. J. Hickey of that city, doing busiuess as the Norfolk Plumbing & Tinning Company, against the Retail Stove and Sheet Metal Workers' Association of Norfolk, Portsmouth aud Berkly, Va., for $20,000 damages, on the alleged ground that the firms composing the association had declared a boycott against him and had injured his business by agreeing not to sell materials to him exeept at a prohibitive price fixed by themselves. This case was decided on July 30 by Judge Martin, sitting in the Law and Chancery Court of Norfolk, in favor of the defendants.

In this connection we print the following interesting communicatiou regarding the Retail Stove and Sheet Metal Workers' Association of Norfolk, Portsmouth and Berkly, received from W. H. Barnard & Co. of Norfolk:

This association was formed two years ago, has steadily grown ever since and has become very strong. It was orgauized, as its name indicates, in the interest of the retail stove and sheet metal workers, and only those conducting a sheet metal business are eligible to membership. Among some of its advantages are the following: No member of the association is allowed to do a job for auy geueral contractor without requiring a bond for the payment of his coutract; or, in the absence of such bond, he must notify the owner of the building, in writing, before he commences his work, that he shall hold him responsible for the amount of his contract. The result of this feature has been that not a dollar has been lost to any member of the associatiou on account of the failure or misfortune of the general contractor.

Another good feature of this association is a rule that the members shall not put up any furnaces, ranges, corniice work, tin plate or any other material furnished by the owner, or not furnished by themselves. They also have a rule not to employ any apprentice boy who has worked for any other member of the association who cannot show a written discharge from his previous employer. Many similar good rules are observed, but one of the most happy results is that this organizatiou has discouraged and almost completely put a stop to the practice of itinerant tinners doing job work on their own account. The members are brought together in close, friendly relations, and those who were two years ago viciously and ruinously competing with each other are to-day co-operating with each other. A condition now exists of co-operation instead of competition. Workmen who have habitually loafed aud cheated their employers at their sweet will cannot now do so with impunity.

That this association has accomplished these results without the aid of a natioual association is remarkable, and the members are to be cougratulated that they have stood the fire of a vigorous lawsuit and come out triumphant. We have all over the United States State and natioual associations of hardware dealers and master plumbers and kindred associations, but this is the only association of master sheet metal workers that has come to our notice. That such should be the case is to be regretted.

The Norfolk association is desirous of extendiug its orgauization to other cities throughout the State, and we believe the principle ought to be extended throughout the country. A national society of master sheet metal workers snould certainly exist. It is a painful fact that the credit of this character of business has sadly degenerated in years past, and it is a strong probability that the extension of such associatious as this at Norfolk would uot only strengthen the credit of the members of the trade, but would meet the approval and indorsement of the mauufacturers and jobbers from whom they get their supplies.

M. W. Bohn, the secretary of the Norfolk, Va., association, will cheerfully furnish information in reference to the workiug of the association.

Fig. 7.—Front View of Large Cowl.

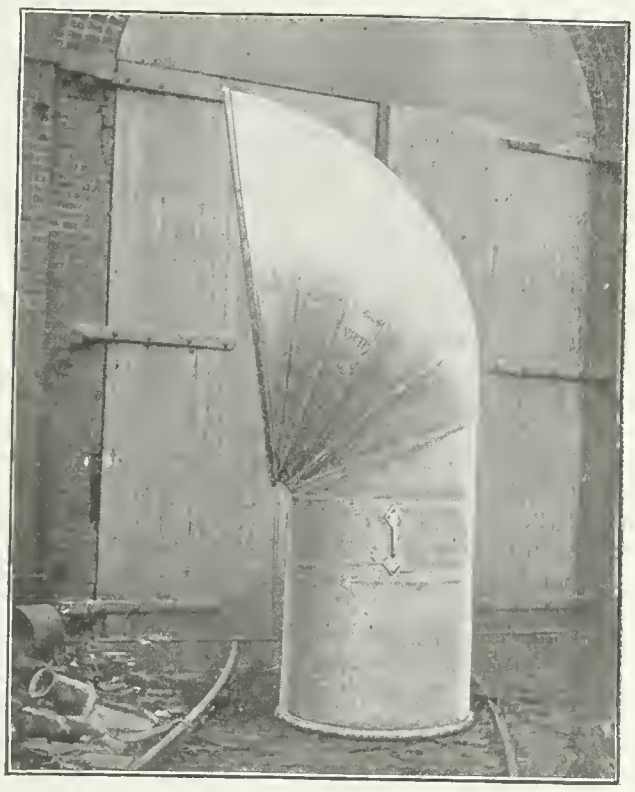


Fig. 8.—Side View of Large Cowl.

PATTERNS FOR SHIP VENTILATING COWL.

It is reported that Pittsburgh capitalists have organized the Carnegie Sheet Steel Company and will build a plant at that place for the maunfacture of Sheets. It will probably be a four-mill plant. The directors of the new company are Robert G. Gillespie, W. H. Skivington, D. R. Torrence, Joseph R. Paull aud T. Bissell Everson. Some of these parties are connected with the Carnegie Tube Company, recently organized, who are building a Tube mill at Carnegie.

We are in receipt of a copy of a paper entitled "A Course of Instruction in Mechanical Drawing," by L. S. Randolph, M.E., professor of mechanical engineering at the Virginia Agricultural and Mechanical College, Blacksburg, Va., preseuted at the fourteenth anuual conveution of the Association of American Agricultural Colleges and Experiment Stations. In his paper Professor Randolph gives an interesting statement of the methods adopted by him in conducting the important department of mechanical drawing instruction in the institution with which he is connected.

The Steel Workers' Strike.

The general strike order issued by President Shaffer of the Amalgamated Association went into effect last Saturday night. But the result was not equal to the expectations expressed last week by the leaders of the association. Not more than half a dozen plants are now idle that were at work before the order was issued. The number of men who have obeyed the latest edict of Mr. Shaffer is comparatively small, and the prediction that the operations of the United States Steel Corporation would be fatally crippled by the going out of a majority of the workmen has not been justified by the event. The fact that most of the Amalgamated employees of the Federal Steel Company in the Chicago and Milwaukee districts decided by a large vote to continue at work, in spite of strong pressure to get them to go out, is a severe blow to the interests of the strikers.

The National Tube Company have been crippled to some extent by the shut down of two or three of their skelp mills and also by the closing down of the Riverside Tube plant at Wheeling, W. Va. All the other tube mills of the National Tube Company, however, are unorganized and are therefore not affected by the strike, and are running to full capacity.

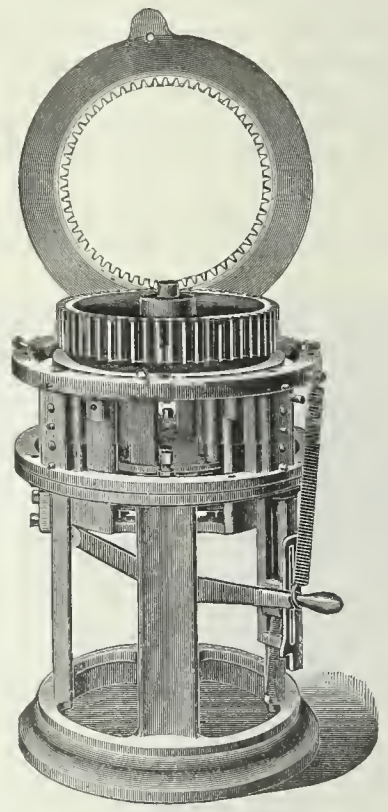
The situation in the sheet mills has not undergone material change since last week. All the nonunion mills of the American Sheet Steel Company in the Kiskiminetas Valley—namely, Leechburg, Saltsburg, Vandergrift, Old Meadow, Apollo, Scottdale and Hyde Park—are running to full capacity, and enable the American Sheet Steel Company, in connection with the Wellsville works, to turn out fully 65 per cent. of their capacity in sheets. There has been some talk of the Wood works at McKeesport being dismantled and taken to Vandergrift, and while this may have been contemplated, it is believed the strike will be ended in a short time, making such a step unnecessary. It is a fact, however, that the officials of the United States Steel Corporation are much chagrined at the attitude assumed by the city officials in McKeesport since the strike started, and will not likely extend their works in that city until they have more encouragement to do so. The Chartiers Works of the American Sheet Steel Company, at Carnegie, were opened on Tuesday, and the men given an opportunity to go back to work, which they refused, and the mill will be removed to Vandergrift.

No attempt has yet been made by the American Tin Plate Company to start their mills, all of which are idle with the exception of the Monessen works. This plant continues to run full, and with so much success that the officials of the American Tin Plate Company have about decided to very much enlarge the capacity of the plant, and in addition will likely remove several other plants to Monessen. One of the plants that is likely to be taken there is the Beaver works at Lisbon, Ohio. The American Tin Plate Company are importing a large quantity of black plate from the other side, which will be distributed among three or four works and dipped. The members of the International Protective Association of Tin Plate Workers are to vote this week on whether they will work up this black plate, and the impression is they will agree to do so. There is not the best of feeling between the Association of Tin Plate Workers and the Amalgamated Association, and it is not believed the former will go out of its way to serve the interests of the latter. The Crescent plant of the American Tin Plate Company, at Cleveland, resumed operations as a nonunion mill, one-half the trains being put into operation.

The duration of the strike is still a matter of conjecture. Late advices from Pittsburgh seem to indicate that a strong feeling is growing among some of the leaders of the Amalgamated Association that efforts should be made to end it, but President Shaffer denies that a settlement is near. Regardless of how long the strike lasts, however, it can be set down as a certainty that the United States Steel Corporation will refuse to recognize as an organization the men who have violated their contracts. This means that in the future all the mills of the American Steel Hoop Company, the American Sheet Steel Company and the American Tin Plate Company will likely be run with nonunion men.

The Standard Round Molding Machine.

In the standard round molding machine made by the Wm. H. Eddy Company of Worcester, Mass., the stripping frame is worked by a lever which is operated by

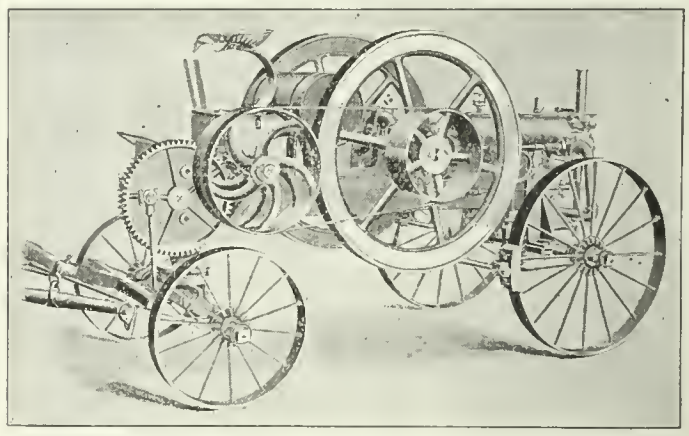


The Standard Round Molding Machine.

the foot. A screw adjustment is provided for the drop and adjustment of the pattern in the stripping plate. These machines are built in sizes from 12 inches and upward.

The Sterling Portable Gasoline Engine with Pumping Gears.

A portable gasoline engine having a pumping jack mounted on the front end of the frame has been designed by the Charter Gas Engine Company of Sterling, Ill. The gear is operated by a belt running from the pulley on the engine shaft to the tight and loose pulleys on the pinion shaft. This attachment is intended for



The Sterling Portable Gasoline Engine with Pumping Gears.

use on large ranches where the wells are located at different points on the ranch. Instead of having a pumping jack at each well, the engine is hauled to the wells, the pump rod connected to the working head in the well, and as much water pumped as desired, when the outfit is disconnected and moved to another well. By throwing off the pump belt the engine can be used in the ordinary way wherever power is demanded.

THE LETTER BOX.

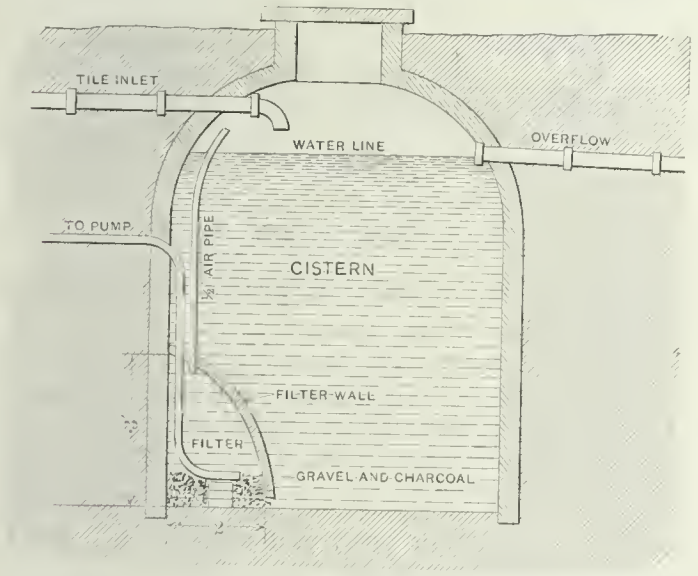
Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

CISTERN FILTER.

From A. H. Phillips, Glen Cove, L. I.—In answer to the inquiry of "E. L. S.," in *The Metal Worker* of July 20, I give herewith a sketch of a kind of cistern filter which I have found very satisfactory in a number of years' experience. Although I have used it in connection with round cisterns, it can readily be used in connection with filters of other shapes. The cistern should be built of the desired size and coated on the inside with cement mortar ½ inch thick. The cistern should be allowed to stand until it is hard and dry enough to hold a man's weight and then some short boards should be placed in the bottom to stand on.

Now is the time to start the filter. It is best when made to occupy but a small section of a round cistern and to assume a beehive shape. After a few courses of brick have been laid, place three bricks in the middle of the filter chamber for the pump pipe to rest on; then take a pail of gravel and a pail of charcoal broken about the size of black walnuts and pour it into the chamber



Cistern Filter.

and spread it around so that the top of the bricks is above the charcoal and gravel. Place the perforated end of the pump pipe on the brick, as shown in the cut, and continue the filter wall, arching it over through the side wall of the cistern. Don't coat the filter chamber when finished with the cement mortar. The brick will filter the water. Have the pump pipe pass out of the cistern wall just before the arch is turned to form the top. The inlet pipe and the outlet pipe should connect with the cistern near the crown of the arch and the inlet pipe should always be a few inches higher than the outlet pipe. Tile pipe should be used for both of these connections so that they can be cemented securely to the wall. The connections in the tile pipe should be calked with oakum to prevent the cement used in filling the hub from entering the pipe and obstructing it. There is an advantage in having an air pipe of ½-inch galvanized iron or lead pipe run from the top of the filter chamber to the point above the water line in the cistern and having the upper end protected by a wire guard.

The filter chamber should extend in from the cement wall about 2 feet at the widest point, and should extend up so as to connect with the side wall of the cistern about 3 feet above the bottom. Galvanized pipe is best for the pump pipe. If lead pipe is used care should be taken in making the bend, and also in protecting the pipe against sagging from its own weight. The pipe should also be filled with sand so that it will not flatten out at the point where it is bent.

Such a filter arrangement with gravel and charcoal and air pipe will keep the water in the cistern pure and sweet. The cistern should be made with a mouth at the top large enough so that a man can readily enter. The opening should be covered with a flat stone laid in cement. This will enable the cistern to be cleaned. In the course of four or five years the filter wall should be taken down and cleaned carefully and new charcoal placed in it after the chamber and bricks have been thoroughly cleaned.

From F. F., Enterprise, Fla.—In answer to the inquiry of "E. L. S." in *The Metal Worker* of July 20, I give the following description of the filter I have built in my cistern and which works splendidly. I built on the bottom of the cistern a square chamber 24 inches each way and 18 inches high, using coarse, soft brick and mortar. I laid strips of 1½ x ¼ inch iron across the top to support the top of the chamber. The pump pipe was run into the chamber and cemented tight, so that the water had to filter through the bricks to reach it. The water that comes from the pump is very clear. It is a simple matter to clean off the outside of this filter chamber occasionally, and should the bricks get very foul it would be a small job to make the chamber again of new bricks. This has not been necessary as yet with mine, but I have cleaned the cistern frequently on the principle that cleanliness is a virtue.

PAINT THE ROOF BEFORE IT RUSTS.

From M. M. C., Millbrook, N. Y.—Several years ago I saw something in *The Metal Worker* about not allowing a tin roof to rust before painting it, and having mislaid the copy would be glad to see something on this subject again.

Answer.—The probable reason many tin roofs are allowed to rust is because the paint on being applied holds better than if an attempt was made to paint the roof as soon as completed. A little time also allows the rosin used in soldering to crack off and permit the paint, when applied, to cover the tin in all places. In coating the plates with tin, palm oil has been largely used as a flux, and as long as this grease is on the surface the paint for the protection of the tin does not get down to the material and is likely to peel off or readily scrape off. A correspondent, in a former issue, states that it is a simple matter to give the roof a wash with turpentine, which will remove all the greasy substance. If the bulk of the rosin with which the roof has been soldered is scraped off previous to this turpentine wash there will not be enough rosin left to interfere with the paint adhering directly to the metal.

Different experienced men make the following remarks about allowing a new tin roof to rust. One says: To allow a new tin roof to become rusty before being painted is like closing up the bunghole of a barrel while the liquid is flowing off from the spigot. A rough surface secures the paint better but gives the tin a start toward rusting and the rust will sooner or later destroy it." Another says: "After an experience of 30 years, my advice in the matter of roof painting is, to begin with, a new roof should not be allowed to accumulate any rust before painting." Another expert points out that if a layer of hydrated oxide (ordinary rust) be allowed to form, the successive coats of paint will peel off, their separation from the tin being merely a question of time, during which time the rust has been spreading under the paint. From this it may be readily inferred that an iron surface, even though coated with tin, should not be left exposed to the weather until rust has formed before painting, because, once started, its action is liable to continue even though paint be applied.

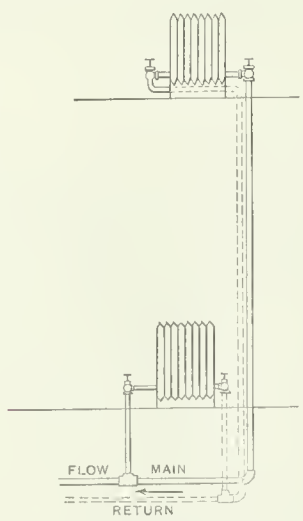
Regarding the time that should elapse after a tin roof is laid before it is painted, much depends on circumstances. If the tin is greasy from the palm oil flux so as to render the paint liable to peel off, the roof may be left exposed until the oil has been washed off, although some roofers recommend that as soon as a roof is finished the rosin should be removed and the surface should be washed with turpentine, benzine or an alkali, to remove all traces of the palm oil or other grease. Another method is to sprinkle sand over the roof and sweep it off with

a broom. In localities near the sea coast, where coal is largely used for fuel, tin plate exposed to the weather is soon corroded, and when the cheaper grades of roofing plates are used the surface soon becomes covered with a rust. Consequently it is advisable to clean the roof so that a good paint will adhere and paint it as soon as possible.

An expert roofer points out that the value of a paint is in its oil, and economy consists in purchasing a good oil paint, the best and purest to be obtained. He says that the use of 15 to 20 per cent. of a pure fish oil, free from any adulteration with kerosene or coal oil, will not detract from the value of a pure linseed oil. The principal reason for the adulteration is that the more plastic the first coat is the more durable, but the greater the tendency to crack the second coat. The weather coat should always be more flexible, containing more non-drying oil. But a man of good judgment will discriminate. The most flexible, in the true sense, of good oils is boiled oil, but if too thick it will stand mixing with raw oil or with turpentine. As a priming coat, such oil mixed with a little red lead, if not put on too thick, will stick tight to the roof. A little boiled oil thoroughly mixed with raw oil increases its elasticity but probably increases the chances that the paint will wrinkle and curl a little, although if care be taken in mixing and in using it any such effect should be so small as to be imperceptible. There is a strong reason for using more or less of boiled oil—that is, if the pigment, particularly lead pigment, will the more thoroughly unite with and harden the oil.

HOW SHOULD RADIATOR BE CONNECTED?

From V. I. C., Brooklyn, N. Y.—In answer to the inquiry of "I. R." in *The Metal Worker* of August 10, I would advise against the use of a twin ell. I think that the hottest water would "short circuit" through one or the other of the radiators. A far better way to connect the radiators is shown in the accompanying sketch. The supply to the first-floor radiator is taken off the floor main before the end is reached in order to insure a supply of hot water entering it. If a twin ell was used on the end of the main the hottest water would go to the highest point, which is the radiator on the second floor, and this would probably interfere with the heating of the radiator on the first floor. The method of connecting



How Should Radiator Be Connected?

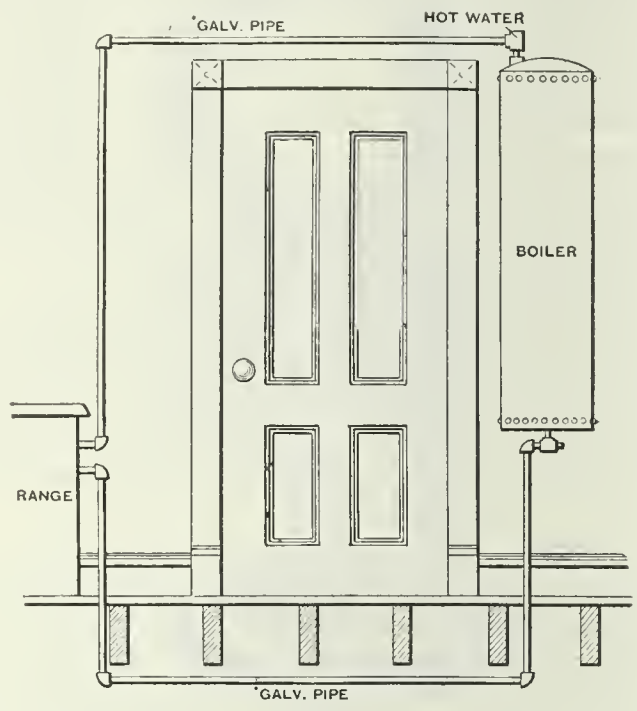
radiators used under such conditions by most of the steam fitters of my acquaintance is as shown in the sketch. There may be other equally good methods, and I hope those who use them will show them up.

SETTING HORIZONTAL HOT WATER TANKS.

From H. and C., Pittsfield, Maine.—I would like to know the best way to set a 300-gallon horizontal hot water tank in a cellar. I have set it on brick piers and am told that this is not right. I would like to know what is right, and wish that the readers of *The Metal Worker* would give me some information on the subject.

CONNECTING RANGE AND BOILER WITH DOOR BETWEEN.

From C. R. L., Rumford Falls, Maine.—I have a customer who wishes me to put the plumbing in his house, and wants the range boiler in the bathroom, which is on the same floor as range. The doors, however, come so that one pipe must be run up over the door and the other under the floor. I do not know how



Connecting Range and Boiler with Door Between.

to pipe it so that circulation will be sure. Some say it cannot be done.

Answer.—A contributor to a former issue of *The Metal Worker* furnished the sketch shown herewith in reply to a similar inquiry, saying: "I believe boilers were connected in this manner long before the 'side coupling' was used on the boiler. If 1-inch pipe is used and the upper pipe is graded to let air escape to the hot water service pipe, there will be no trouble about the circulation. It would be well to have a tee for a draw off cock where one of the ells is used in the cellar. If the cellar is very cold, the supply of hot water may be reduced or the pipe frozen if it is not wrapped or covered to prevent loss of heat. Such a connection will furnish hot water very quickly without the delay of heating all the water in the boiler."

CAN THE RUST BE AVOIDED?

From E. W., New York.—I have a rod iron testing pot; to heat the water by steam. When I do not work at it and leave the water in it for half an hour, the pot is full of rust. I would like a remedy for it.

Note.—We have printed our correspondent's inquiry as we received it, hoping that some one may understand his difficulty and be able to suggest a remedy. Perhaps, however, we have misread his letter, as we do not know what he means by a "rod iron testing pot to heat water by steam."

WHO MAKES REGISTER CLIPS?

From T. R. Freeman, Sioux Falls, S. D.—I would like to learn where I can get little iron clips to hold registers in place. They screw on the outside of the register into the border.

The fire loss of the United States for July again showed a heavy total. According to the New York *Journal of Commerce* the aggregate loss amounted to $15,740,000, which is abnormally large for July. The June loss was $9,500,000. The total for the seven months ended June 30 has reached $104,675,000.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is dull and ½c. lower in price.

Copper continues quiet and without change.

Pig Lead is unchanged.

Spelter is dull and weak.

Hallett's Antimony is ¼c. lower in price.

Nickel remains firm and scarce.

Aluminum is in active demand at former prices.

Tin Plates are scarce and prices high and stiffening.

Sheets are in active demand and scarce supply, with prices nominal.

Planished Iron Sheets are becoming scarce and prices are advancing.

Sheet Copper is in good demand and firm in price.

Pig Iron is weaker in some quarters, but without notable change.

Hardware prices are well maintained and the volume of trade is good.

Plumbers' Supplies are still moving in good volume and are strong in price.

Wrought Iron Pipe has been advanced this week by jobbers from 12½ to 20 per cent.

Malleable Fittings were marked up 10 per cent.

Plumbers' Brass Work is in sharp demand, with prices very firm.

Enameled Bathtubs are still very scarce.

Plumbers' Wood Work of good quality is also very scarce and prices strong.

Radiation has been advanced 10 per cent. in price.

Wire Nails are moving in good volume, with prices unchanged.

Wire continues in active demand and is firm in price.

Mixed Paints have been advanced 10c. per gallon.

Linseed Oil has declined 10c. per gallon.

Spirits Turpentine is ½c. a gallon lower.

METAL MARKET.

NEW YORK, August 16, 1901.

Pig Tin.—During the entire week business has been dull. Spot Tin has sold in a small way only, and prices have declined about ½c., the market closing weak and tame. Jobbers quote Straits Pig in small lots at 27¾c. to 28c. per lb. Large arrivals will be due here next week, and this, with the falling off in consumption due to the idleness of the Tin Plate mills, serves to depress the market.

C. S. Tronch & Co., New York, have issued the following American statistics of Pig Tin:

	Tons.
Estimated stocks on spot, New York, Philadelphia and Boston, July 1	1,512
Actual arrivals during July, New York, Philadelphia and Boston	1,756
Total	3,268
Estimated consumption during July	2,400
Estimated stocks on spot, New York, Philadelphia and Boston, August 1	868
Actual afloat from East Indies, shipments to August 1	2,200
Actual afloat from England, shipments to August 1	410
Actual afloat from Holland, shipments to August 1	Nil.
Total visible supply, August 1	3,478
As against July 1	4,068
As against June 1	5,427

Copper.—Demand is of moderate proportions and the market largely nominal, but without quotable change. Small lots of Lake Ingot continue to be quoted at 17¼c. to 17½c. per lb., and Casting Copper at 16¾c. to 17c. Exports thus far this month are the smallest on record, amounting to barely 1500 tons, as against the total of 13,849 tons for August of last year. Imports since the first of this month amounted to about 2800 tons, and this is the first time on record when the imports were almost double the amount of the exports. Domestic production for July was 21,985 tons, as against 22,401 tons in June. For the first seven months of this year the output was 155,379 tons, a falling off of 2200 tons as compared with the corresponding period of last year.

Sheet Copper.—The manufacturers of Sheet Copper report a good, steady demand. A considerable amount of Copper is going into the numerous large new buildings that are going up in various parts of the country. Probably more of this material is being used this season in architectural work than ever before. Prices are firmly held on the basis of 21c. per lb. from store.

Pig Lead.—There is no change in this market, and a quiet, steady business is being transacted at the prices ruling for some time past. Small lots of American Pig are quoted at 4.60c. to 4.62½c. per lb. St. Louis market is quiet and unchanged.

Spelter—Is extremely dull at unchanged prices, good Western brands, in small lots, being quoted at 4.45c. to 4.50c. per lb.

Sheet Zinc.—The demand for Sheet Zinc is of about the usual proportions. Jobbers quote 600-lb. cask lots at 6¾c. per lb. and smaller quantities at 7¼c.

Antimony.—A fair demand is noted. Cookson's, in small parcels, is quoted at 10½c. to 11c. per lb., but Hallett's has declined ¼c. to 8½c. to 9¼c.

Nickel—Is firm and unchanged. Small lots are quoted nominally at 60c. to 65c. per lb.

Aluminum.—A good demand at former prices is reported for this metal. No. 1 Ingot, guaranteed 99 per cent. pure, in small lots, is quoted at 37c. per lb. and 100-lb. lots 35c.

Tin Plates.—The market presents no new features, except that the scarcity of Plates is more pronounced than ever. The available supplies in jobbers' hands are being rapidly depleted, and very high premiums are being paid for such goods as can be secured. Nothing is coming in from the mills. Prices are entirely nominal and cannot be quoted with any degree of accuracy. As an indication of the situation, however, it may be mentioned that $7 to $7.25 per box is about the lowest figure at which American Bessemer Coke Plates, 1 C, 14 x 20, can be bought in New York. As high as $8 is said to have been paid cheerfully for these Plates in some instances. The outlook is regarded as quite serious should the strike be prolonged. The market for Welsh Plates was advanced again this week about 10c. a box. About 8000 boxes arrived from Liverpool during the week. Another steamer from Swansea is due here on Saturday, and it is expected that she will carry fully as large a cargo as last week's steamer, which had 27,000 boxes aboard. The fact that a portion of these shipments are to be re-exported in their manufactured state should, however, not be lost sight of, and the balance is believed to have been already sold to manufacturing consumers.

Sheets.—The Sheet market displays almost as great a condition of stringency as that for Tin Plates. There is no alleviation of the scarcity that has been experienced for several weeks past, and it is more likely to grow worse than better in the near future. There is a very active demand, with the active mills oversold, and any one who has Sheets to ship out promptly can get almost any price. The idle mills have taken a considerable output out of the market for the time being, and, although some new capacity is coming into operation, it will be some time before it will give any appreciable relief to the situation. Galvanized Sheets are even harder to get than Black. The closing down of the Dewees Wood mill at McKeesport, and the merely par-

tial operation of the only other plant making Planished Iron Sheets, that at Wellsville, Ohio, has caused a marked scarcity of that material, which is becoming felt by the users of Planished Sheets, and prices are going up. New York jobbers are quoting No. 27 One Pass Cold Rolled Stoft Steel Sheets at about 4.10c. to 4.15c., and Galvanized Sheets at 60 per cent. off the list.

Chicago advices are as follows: The Western trade in Sheets is mainly from store. Prices have not materially advanced during the last week, though there is much irregularity in quotations, conditions widely varying with both buyers and sellers. While some stocks are practically exhausted, there are others that are yet in good shape. Though demand is quite large, No. 27 Black is quoted from 3.80c. to 4c. For Galvanized 65 per cent. is a common quotation. Sales have been made as high as 60 and 5. There are now practically no stocks of Tin Plates remaining, the sales of the past two weeks having cleaned up everything in sight.

THE PIG IRON MARKET.

New York.—In the metropolitan district very little new business is reported and sellers seem somewhat eager to get orders for future delivery on their books. Prices are unchanged, although the pressure to market on the part of some Southern sellers has ceased. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $14.50 to $15; No. 2 Foundry, $14 to $14.50; No. 1 Soft, $14.50 to $15; No. 2 Soft, $14 to $14.50; No. 3 Foundry, $13.25 to $13.50; No. 4 Foundry, $12.75 to $13.25.

Chicago.—The tone of the market may be slightly firmer. Quotations have not advanced, but there is an absence of concessions previously granted. A number of smaller Southern producers have practically withdrawn from the market for shipments within 60 or 90 days. Another reason for the slightly better feeling is that little Iron is on track, producers having obeyed the usual rule of limiting shipments to barest needs on the eve of a possible strike. There is little or no Iron that is pressing for sale. The molders' strike, however, continues to dull the demand locally and buying on the whole is moderate. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon.	14.90 to 15.15
Southern Coke, No. 1	14.65 to 14.90
Southern Coke, No. 2	14.15 to 14.40
Southern Coke, No. 3	13.65 to 13.90
Southern Coke, No. 1 Soft	14.65 to 14.90
Southern Coke, No. 2 Soft	14.15 to 14.40

Philadelphia.—The outcome of the week's business has not been unfavorable to the selling interests. Sales have been in fair volume. Inquiries for quotations and short options on good sized lots give the impression that there is a considerable amount of business approaching maturity, and that all the Iron that is being made will for some time to come find a ready market without making a new list of quotations. Prices are steady to firm, as quoted in our last—viz., as follows for city and nearby deliveries, and 25c. to 50c. less at points within a radius of 100 miles or so South or West: No. 1 X Foundry, $15.50 to $16; No. 2 X Foundry, $15 to $15.25; No. 2 Plain, $14.25 to $14.75.

Pittsburgh.—The Bessemer Iron market is absolutely lifeless and there has been nothing done since our last report. There has been little if any Iron sold for September, and if the strike runs into next month the leading Steel interest will hardly need any Iron on account of some of their mills being closed. Some of the Eastern furnaces are offering Iron in this market at low prices. Foundry Iron is very dull and the tone of the market is weak. We quote: Bessemer Iron, $15.75 to $16; No. 1 Foundry, $14.50; No. 2, $14 to $14.25, and No. 3, $13.50 to $13.75, Pittsburgh.

Cincinnati.—In the territory immediately tributary to Cincinnati the Pig Iron trade has been tolerably quiet throughout the past week. Judging from the amount of inquiry in sight trading will continue slack for the present. The situation has not become any more simple than it was a week ago. One thing, however, is certain—that the asking prices for Iron and the figures at which it is actually being sold are 25c. to 50c. higher than they were two weeks ago. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$13.50 to $13.75
Southern Coke, No. 2	13.00 to 13.25
Southern Coke, No. 3	12.50 to 12.75
Southern Coke, No. 4	12.00 to 12.25
Southern Coke, No. 1 Soft	13.50 to 13.75
Southern Coke, No. 2 Soft	13.00 to 13.25
Southern Coke, Gray Forge	12.00 to 12.25
Southern Coke, Mottled	12.00 to 12.25
Ohio Silvery, No. 1	15.50 to 16.00
Ohio Silvery, No. 2	14.50 to 15.00
Lake Superior Coke, No. 1	14.50 to 15.00

CHICAGO REPORT.

Scrap Iron and Steel.—The market remains in about the same condition as noted in our last report. Consumers are pretty well stocked up. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap	$10.50 to $11.00
Machinery Cast	10.00 to ....
Malleable Cast	10.00 to 11.00
Stove Plate (free from burnt)	7.00 to 7.50
Burnt Iron and Grate Bars	5.50 to 6.00
Sheet Iron and Hoops	6.00 to 7.00
Plow Steel	9.00 to 10.00
Breaking Stock	9.00 to 9.50
No. 2, such as Shovels, Hoes, &c	.... to 7.00
Old Boilers—whole (Iron)	.... to 7.00
Old Boilers (Iron) cut in single Sheets and Rings	9.50 to 10.00
Old Gas Pipe and Boiler Tubes	10.00 to 10.50
Cast Borings	4.00 to 4.25
Turnings	8.50 to 9.00
Horseshoes	11.00 to ....

Old Metals.—The market is dull and unchanged and without feature of any kind. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	14½c.
Copper Bottoms	13¼c.
Copper Clips	14 c.
Red Brass	13¼c.
Yellow Brass	10 c.
Red Brass Borings	11½c.
Yellow Brass Borings	9 c.
Light Brass	7½c.
Pipe Lead	4 c.
Tea Lead	3½c.
Zinc	2¾c.
Pewter, No. 1	19 c.
Pewter, No. 2	10 c.

Old Rubber.—The demand for Old Rubber is very light, and there is but little doing in this market. Buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$23.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7¾c.
Rubber Car Springs	....	4¾c.
Inside Bicycle Tubing	....	21 c.
Outside Tubing	....	7¼c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—Business has been very light during the past week and no change is looked for at present. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo	8.25	8.50

A discount of 10c. from these figures is allowed on all Coal ordered to be shipped in August.

It is again reported that efforts to combine the manufacturers of Black Lead or Plumbago Crucibles in the United States are being made. This is the third attempt that has been made in the last year or so, the former ones being failures. It is now said that options have been secured on all of the plants, with one exception, and a conditional agreement has been made with that company.

The Jeffrey Mfg. Company, Columbus, Ohio, are sending out an attractive booklet of 24 pages, printed in two colors and illustrated with half-tone engravings, devoted to Conveying Apparatus and Elevators adapted for carrying ore, metal, coal or manufactured articles from one point to another.

THE HARDWARE TRADE.

The strike among the steel workers is having a somewhat stimulating effect upon the hardware business generally. Manufacturers not producing their own raw material complain of trouble in obtaining it, and are behind on orders for their finished products. Notwithstanding the hopeful view taken by the trade of the outcome of the labor disturbance, uneasiness has been caused by the fear that goods would be difficult to get when wanted, and that prices might advance. In anticipation of these conditions and of a large fall trade, jobbers are placing orders for larger quantities of goods and ordering earlier than usual. Prices are remarkably even considering the demand and the scarcity in many lines of goods. Few changes have taken place in values, and the market is, as a rule, firm.

NOTES ON PRICES.

Plumbers' Supplies.—Trade with most of the jobbing houses keeps up in wonderfully good volume for this normally dull season, although there are indications of a let up in business here and there, owing to the vacation season being at its hight. A subject of universal complaint is the scarcity of many kinds of goods and the difficulty of obtaining prompt shipments from the manufacturers. This has reached an acute stage in some quarters, where operations are being seriously hampered through the inability of contractors to obtain materials. All the plants turning out Plumbers' and Steam Fitters' Supplies are running full, showing that the current consumption of these goods must be enormous. Prices, under the circumstances, are naturally very strong, and the trade are becoming inured to the announcement of advances which are made from week to week.

Plumbers' Earthen Ware.—The Trenton Potteries Company, who are the largest manufacturers of Solid Porcelain Bathtubs, Lavatories, Laundry Trays, Kitchen and Pantry Sinks, &c., have issued, under date of August 15, new price-lists and discounts on their Ideal goods. The reason given for issuing the new list is that the old list did not in all cases bear the proper relations to the cost and selling prices, due to the fact that the list was compiled during the experimental stages of the manufacture of this grade of Sanitary Pottery. The new prices in many cases will vary very little from those heretofore quoted, but some articles have been advanced in proportion to the cost, so that the list, as a whole, is more evenly balanced, and, it is believed, will be accepted as the standard list for some years to come. Notice is called to the fact that the prices for Bathtub Frames have been materially reduced, while the cost price has been charged for packages on all other goods. The Trenton Potteries Company are making extensive improvements in their Ideal plant, and before the close of the year their production in Solid Porcelain Goods will be increased fully 50 per cent.. The increased facilities will thus enable them to execute orders very promptly.

Lead Traps, &c.—The manufacturers of Lead Traps, Bends, Ferrules, &c., have issued the following notice to the trade regarding packages and deliveries:

As the deliveries on Lead Traps, Bends, Ferrules, Drum Traps, Combination Bends and Ferrules, &c., are not apparently understood by the trade, we desire to say that the following conditions are applicable to all orders for these goods at the present time. On shipments to jobbers only, at jobbing points, all freight will be allowed. On shipments direct to customers to other than jobbing points there will be no freight allowance, and all packages will be charged.

Wrought Iron Pipe and Malleable Fittings.—On Tuesday, August 13, the jobbers and manufacturers in Steam and Hot Water Supplies in this vicinity issued prices on Wrought Iron Pipe, Black and Galvanized, and also on Malleable Fittings, Black and Galvanized, which show advances ranging from 10 to 20 per cent., according to the sizes. The advance in Pipe, it is understood, is brought about entirely by the strike, and is due to the fact that little or no Pipe is procurable at the mills. The most radical advance was in Galvanized Pipe of the smaller sizes—*i. e.*, from ⅛ to ½ inch. These sizes have been advanced fully 20 per cent. and are, it is said, unobtainable at these high prices, there being practically no ½-inch Pipe in the market. The local galvanizing plants are two months behind with their orders. The trouble with the galvanizing plants is due chiefly to the extremely long spell of hot weather recently experienced. The difference in cost to the jobbers between Pipe which they bought at the mills in the black state and had galvanized at a local plant and similar Pipe bought at the mills, already galvanized, was so considerable that nearly all the local jobbers resorted to this method of procuring their Galvanized Pipe, thereby further congesting business at the galvanizing plants. The scarcity of Galvanized Pipe is now so pronounced that prices are at least 30 per cent. higher to-day than they were two weeks ago. The price on small Black Pipe and large Galvanized Pipe advanced from 12½ to 15 per cent., according to the sizes. The advance in the price of small Black Pipe is due to the fact that very few of the independent manufacturers are making sizes smaller than ½-inch, consequently there is a scarcity of these goods. The same conditions applying to small Galvanized Pipe are applicable to large galvanized, but not to such a marked extent, owing to the fact that the independent mills are making the large sizes in black. Large sized Black Pipe has advanced about 10 per cent. It is quite likely that, in the course of the next few weeks, there will be another material advance made by the jobbers. A rumor is current in the trade that the largest manufacturing interest have notified the jobbing trade that they will advance prices on the 25th of the month, and that the advance will be of a sweeping character. Meanwhile, they are giving the jobbing trade an opportunity to feel the market and ascertain what business there is in sight and to what extent they can maintain the advance when it is made. The prices on Malleable Fittings were advanced 10 per cent. This was done conjointly by the manufacturers and the jobbers alike. The advance made by the manufacturers approximated 7½ per cent. over previous quotations. This advance of the manufacturers, taken in conjunction with the scarcity of Malleable Fittings, incited the jobbing trade to raise their prices 10 per cent. There will be no difficulty whatever in holding these prices.

Plumbers' Brass Work.—The situation in the Brass Work market, with the exception of a marked scarcity of the goods, remains unchanged. Prices are much steadier than they were a week ago. Stocks are running very low and the local jobbing trade is experiencing a continued run on all kinds of Plumbers' Brass Work.

Enameled Bathtubs.—The market for Enameled Bathtubs is still in the same condition of stringency. Prices at the foundries are still unchanged. The jobbing trade is realizing large profits on the goods which they have on hand, much more than they were two weeks ago. This is entirely due to the fact that no one jobber has a complete stock of sizes. There is considerable trading of sizes among the jobbers, and those who have any quantity at all are realizing as much from their sales to the jobbing trade as they heretofore did from the plumbers. The jobbers, having entered into contracts with the plumbers, are compelled to furnish the goods, and the other jobbing houses which have the goods on hand, knowing of this condition of affairs, are making their competitors pay them premium prices for their wants. There is absolutely no relief in sight and the present condition of affairs cannot be altered much before the first of the year. It is said that New York City alone is using 400 bathtubs a day, and there are not more than 300 a day coming in. This includes all shipments arriving at New York City. This estimate of the amount of Tubs reaching New York is said to be very conservative. The scarcity of Steel Sheets, from which Steel Clad Tubs are made, has advanced prices on this class of Tubs to such an extent that it brings them within a short distance of the cost of the Enameled Iron Tubs.

Plumbers' Wood Work.—Plumbers' Wood Work of the better qualities still remains scarce in this market. The plants which are manufacturing the better grades of Wood Work are four months behind with their orders and there seems no likelihood of their catching up within any appreciable time. There is no scarcity whatever of the inferior grades of Wood Work, and it is this class of goods alone which is at all procurable. This is the harvest time for the manufacturers of the cheap Wood Work which is now being turned out. This class of goods commands a ready sale in speculative building. It looks all right when it is sold, but it has no lasting qualities. Tanks made from this class of wood are generally lined with light weight copper and are trimmed with fixings of a very inferior grade. Still they are Tanks and answer the purpose for which they are made—*i e.*, to trim the bathroom and help sell the house for the builder. Houses trimmed with goods of this kind are very generally overhauled immediately after they are sold, the owners putting in plumbing material of first-class quality.

Wire Nails.—The distribution of Wire Nails is satisfactory. Orders are for fair quantities and are frequent. Small lots at store, New York, are quoted at $2.60 per keg.

Cut Nails.—The demand for Cut Nails from territory tributary to New York continues fair and without change. Small lots from store rule at $2.18 to $2.25 per keg.

Wire.—The volume of business in Plain Wire contiuues heavy and some of the mills are still unable to make prompt deliveries as wanted. The toue of the market is strong. Plain Wire, in a retail way, is quoted at 2.60 cents and Galvanized at 3 cents.

Bundy Radiators.—The price ou Buudy Perfect Indirect Radiation was advanced, 5th iust., 5 per ceut. The Bundy School Climax Indirect Radiator, slip nipple conuection, coutinues at the same price as quoted on the Perfect, July 15.

Window Glass.—The local demand for Window Glass is limited to small lots. Stocks in manufacturers' and jobbers' hands are larger than was anticipated for this season. To afford an opportunity for stocks to be considerably reduced, it is probable that the American aud Independent companies will defer starting their factories, at least until October 1. When the fall demand sets iu higher prices are looked for.

Paints.—Some of the larger manufacturers of Mixed Paiuts have aunounced a 10 cents per gallon advance in price, based on the high cost of Linseed Oil and of Tin. Since the advance in the price of Paints, Oil has declined 10 cents per gallon.

White Lead.—The decline in Linseed Oil has affected the demand for White Lead in Oil unfavorably and unsettled the market to some extent, although prices are not quotably lower.

Linseed Oil.—On August 16 the price of Linseed Oil was reduced 10 cents per gallon. The new crop of Flax Seed has begun coming in from the Southwest, and, although the crop is comparatively small and of inferior quality, it caused a decline in the price of Seed. Three or four weeks will probably elapse before the size of the Western crop of Seed can be accurately estimated. The future of the Oil market depends entirely upon Seed. A further decline in Oil would not be a surprise to the trade. City Raw Oil, in a retail way, now rules at 73 to 74 cents per gallon. Boiled Oil is 2 cents per gallon advance on Raw.

Spirits Turpentine.—A comparatively light demand has characterized the local Turpentine market. Orders have been for small lots at lower prices than last week. Retail quotations have been reduced ½ cent to 37½ to 38 cents per gallon.

Cotton made the biggest record of any American product in value of exports during the fiscal year 1900-1901, scoring a total of $313,673,443, according to the official statistics of the Treasury Departmeut. The best previous cotton export year was 1891, when $290,712,900 worth was sent abroad. In quantity the exports of the past year were not so great as in 1895, 1898 or 1899, but the price was so much better that the value of exports in 1901 exceeded by mauy millions that of the years of the greatest movement, as measured in pounds. The aggregate value of the cotton exports in the last ten years is more than $2,000,000,000.

TRADE NOTES.

The J. E. Burleson Mica Company have been incorporated at Marion, N. C., to mine and manufacture Mica, with works at Spruce Pine, N. C. J. E. Burleson of Spruee Piue is president and L. J. P. Cutlar of Marion secretary and treasurer of the company.

The American Brass Company, the new owners of the Chicago Brass Works, Kenosha, Wis., have beguu the ereetion of an additional Rod manufaeturing department, 30 x 100 feet, which will enable them to greatly increase the output of the plant.

St. Petersburg has been planning to eelebrate the two hundredth anniversary of the foundation of the city by an exposition in 1903. Minister De Witte, however, has decided that the time is too short for such an important undertaking as that planued and it will be deferred until 1913, which will be 200 years after the Russian capital was removed to St. Petersburg.

CONTENTS.

	Page.
Editorials—	
Prices on the Up Grade	39
The Social Element in Business	39
Careful Buying for Plumbers and Metal Workers	40
Pan-American Exhibit of International Correspondence Schools	40
New Publication	40
Stove Makers at the Astor House	41
The Acme Gas Stove Catalogue	41
The Welcome Flat Ranges	41
The Stewart Catalogues	41
Geo. M. Clark & Co.'s Pan-American Exhibit. Illustrated	42
Royal Stoves and Ranges	42
Gold Coin Stoves and Ranges	43
Odd Plates	43
Michigan Retail Hardware Dealers' Association	43
A Unique Dodger. Illustrated	44
National Enameling & Stamping Company	44
A New Milbradt Rolling Step Ladder. Illustrated	45
The Rollman Apple Cutter and Corer. Illustrated	45
Stove and Hardware Dealers	45
The Boiler Trade	46
Enameled Iron Half-Circle One-Piece Lavatory. Illustrated	46
A New Radiator Catalogue	46
The Climax Gasoline Gas Generator. Illustrated	47
The Imico Boiler Illustrated	48
New York City Notes	48
Heating and Plumbing Notes	48
New Firms and Changes	50
Artificial Leather	50
Flashings	50
Patterns for Ship Ventilating Cowl. Illustrated	51
Retail Stove and Sheet Metal Workers' Association of Norfolk, Va	53
The Steel Workers' Strike	54
The Standard Round Molding Machine. Illustrated	54
The Sterling Portable Gasoline Engine with Pumping Gears. Ill'd	54
The Letter Box—	
Cistern Filter. Illustrated	55
Paint the Roof Before It Rusts	55
How Should Radiator Be Connected? Illustrated	56
Setting Horizontal Hot Water Tanks	56
Connecting Range and Boiler with Door Between. Illustrated	56
Can the Rust Be Avoided?	56
Who Makes Register Clips?	56
Trade Report—	
Market Summary	57
Metal Market	57
The Pig Iron Market	58
Chicago Report	58
The Hardware Trade	59
Notes on Prices	59
Trade Notes	60
Metal and Miscellaneous Prices	61
Labor Exchange—	
Help and Situations Wanted	65

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED AUGUST 16, 1901

The following New York quotations are for small lots:

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots.....₩ lb, 37¢
100-lb lots.....₩ lb, 35¢
Aluminum Sheet, B. & S. gauge.
In lots of 50 lbs or more.

	6-in.	14-in.	24-in.
Wider than.....	14-in	24-in.	30-in.
And including.....	₩ lb	₩ lb.	₩ lb.
Nos. 13 to 19.....	$0.42	$0.44	$0.47
" 20.....	.44	.46	.49
" 21 to 23.....	.46	.48	.51
" 24.....	.46	.50	.53
" 25.....	.47	.51	.54
" 26.....	.47	.54	.59
" 27.....	.48	.57	.62
" 28.....	.48	.57	.64
" 29.....	.49	.60	.69
" 30.....	.50	.64	.77

Note.—Lots of less than 50 lbs 5¢ ₩ lb extra.

Antimony—

Cookson.....₩ lb. 10½@11¢
Hallett's.....₩ lb, 8¾@9½¢
U. S.....₩ lb, 8¾@9¼¢

Brass—Planished .....net

Roll and Sheet.....15@20% off

Brass and Copper Tubes

Brazed Brass Tubing—

Brown & Sharpe's Gauge the Standard.

List Feb. 26, 1896.

Plain Round Tube.	Per lb.	
¾-in. up to 2-in.	$0.35	30@35% off
⅝-in. up to ¾-in.	.36	
½-in. up to ⅝-in.	.38	
⅜-in. up to ½ in.	.41	
5-16-in. up to ⅜-in.	.48	
¼-in. up to 5-16-in.	.65	
3-10-in. up to ¼-in.	1.00	
⅛-in. up to 3-16-in.	1.50	
Smaller than ⅛-in.	Special	
8-in. and larger	Special	
2-in. to 8-in. to No. 19, inclusive.	.38	

Copper & Bronze Tubing—

3¢ ₩ lb more than Brass.

Conductors—

Corrugated. *Round or Square.*—
Galvanized ½ or more. N'st'd.....70&5%
" Not Nested.....70&2½%
" Plain Round, ½ or more. Nested.....70&5%
Galvanized, Plain Round, Not Nested. 70&2½%

Spiral Riveted.

Galvanized.....40%
See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—See *Strainers, Conductor.*

Copper—

Lake Ingot.....17¼@17½¢
Casting.....16¾@17 ¢
Sheet and Bolt.....21¢ ₩ lb basis
Cold Rolled Sheets.....22¢ ₩ lb basis
Cold Rolled and Polished Sheets ..... 23¢ basis
Planished Sheets.....24¢ basis
Bottoms, Pits and Flats.....₩ lb 25¢ basis

Eaves Troughs—

List Feb. 1, 1895.

Lap or Slip Joint, Galvanized, in crates 75&10%

Eave Trough Mitres—

Lap or Slip Joint.....list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin.....30%
Galvanized.....30%
Perfect " Elbows.....40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.	
No. 1.	$0.80	.85	.90	1.00	1.05	per doz
No. 2.	.65	.70	.75	.80	.85	"
No. 3.	.60	.68	.65	.70	.80	"

Elbows and Shoes—

Corrugated

Round or Square.

Galvanized.....60%

Gasoline—See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16.....	₩ lb 3.75...	3.80¢
Nos. 18 to 21.....	₩ lb, 3.85....	3.90¢
Nos. 22 to 24.....	₩ lb, 3.95....	4.00¢
Nos. 25 and 26...	₩ lb, 4.05....	4.10¢
No. 27	₩ lb, 4.15....	4.20¢
No. 28	₩ lb, 4.25....	4.30¢

Russia, Planished, &c.

Genuine Russia, according to assortment.....₩ lb 10½¢
Do. Stained.....6¢@10¢
Patent Planished. ₩ lb A. 9¼¢; B. 8¾¢ uet

Galvanized.

Nos. 10 to 16.....₩ lb, 12¢
Nos. 17 to 21.....₩ lb, 13¢
Nos. 22 to 24.....₩ lb 14¢
Nos. 25 to 26.....₩ lb, 15¢
No. 27.....₩ lb, 16¢
No. 28.....₩ lb, 17¢
No. 29.....₩ lb, 19¢
No. 30.....₩ lb, 21¢
60% off.
36 in. 1¢ ₩ lb higher

Kerosene—See *etroleum Products*

Lead—

American Pig.....4.60@4.62½¢
Bar.....5½@5¼¢
Pipe.....6½¢.....2½% off
Tin Lined Pipe.....12½¢.....20% off
Block Tin Pipe .....40¢.....20% off
Sheet Lead, full rolls... 7¼¢ .....20% off
Sheet Lead, cut.....7¾¢.....20% off
Old Lead in exchange, 4½¢ ₩ lb.

Mitres, Eave Trough—See *Eave Trough Mitres.*

Nickel—

Per lb.....60@65¢

Paints, Oils, &c.—

Lead, White, Atlantic and Jewett's, 7¼¢
Lead, Amn. White, in oil..... 7@7¼¢
Lead, Red, bbls. and ⅛ bbls..... 7@7¼¢
Lead, Red, kegs..... 7@7¼¢
Linseed Oil:
Raw, ₩ gal.....73@74¢
Boiled.....75@76¢
Spirits Turpentine:
In bbls.....37½@38 ¢
Putty:
In barrels and ⅛ bbls..... 2½
In tin cans..... 3½¢
In bladders..... 2¾¢

Palm Oil. 1500 lb casks.

Fancy Lagos.....₩ lb 6 ¢
Clarified.....₩ lb 5¾¢
Accra.....₩ lb 5½¢
Half Jack.....₩ lb 5¼¢

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline.....₩ gal. 12½@13¢
Kerosene..... ₩ gal. 13@13½¢

Pipe, Drain..... ....40%

Pipe, Spiral—See *Conductors*

Registers—

List Feb. 1, 1899.

Black Japanned..... 50&10%
White Japanned.....40&10%
Nickel Plated.....50&10%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze..... .....40%
Electroplated in Brass, Bronze or Copper.....40%
White Porcelain.....20%
Solid Brass and Bronze Metal.....20%

Roofing Material—

Heavy Single Ply Tar Felt,..... ₩ ton $30.00
2 Ply Roofing Felt.....₩ roll, 108 sq. ft. 65¢
3 Ply Roofing Felt....₩ roll, 108 sq. ft. 85¢
Roofing Pitch ₩ hbl.....$2.38

Rosin

(Barrels of 280 lb. Barrels weigh actually about 400 lb).
Common and Good—Strained.
Rosin, C. & D.....₩ bbl. $1.40 @$1.42
Rosin, E. & F.....₩ bbl. 1.65 @ 1.75
Rosin, G. & H.....₩ bbl. 1.80 @ 1.85
Rosin, I. & K.....₩ bbl. 1.90 @ 2.35
Rosin, M. & N.....₩ bbl. 2.65 @ 3.10

Seamless Brass Tubes—

Net List, February 6, 1899.

Shoes and Elbows—See *Elbows and Shoes.*

Slate Roofing—

According to size, f. o. b. cars, Quarry Station.
Pennsylvania:
Best Bangor, ₩ sqr.....$3.25@$4.50
No. 1 Bangor Ribbon, ₩ sq 3.00@ 3.50
Pen Argyle, ₩ sqr..... 3.00@ 3.75
Peaca Bottom, ₩ sqr..... 4.85@ 5.60
No. 1 Boys, ₩ sqr..... 3.35@ 3.55
No 1 Chapman Keystoue, ₩ sqr..... 3.25@ 4.25
Vermont:
Sea Green, ₩ sqr.....$2.00@$3.00
Purple, ₩ sqr..... 3.75@ 4.25
Unfading Green, ₩ sqr... 3.25@ 4.50
Red, ₩ sqr..... 6.50@11.00
Maine:
Brownville, Unfading Black:
No. 1 quality..... .....$5.25@7.50
No. 2 quality..... ..$4.25@6.00

Solder—

½&¼ guaranteed.....19@19½¢
No. 1.....15 @17½¢
Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Concentrated Soldering Flux.
f. o. b. New York.
In barrels. ₩ lb.....4¢
Smaller quantities, ₩ lb.....5¢
Eureka Soldering Flux—Triple Strength.
In barrels, ₩ lb ..... 3 ¢
Smaller quantities, ₩ lb .....3½¢
Eureka Soldering Flux—Extra Concentrated.
In barrels, ₩ lb..... ....4½¢
Smaller quantities, ₩ lb .....5 ¢
Eureka Soldering Flux—Crystal.
In 100-lb cases, ₩ lb .....7¢
Gedney's Soldering Fluid.
In carboys or barrels, ₩ lb.....2¢
$1.50 for carboy or barrel; money refunded when returned.
Lennox Soldering Fluid.
In barrels, ₩ lb.....2¢
In carboys. ₩ lb .....3¢
Perfection Soldering Flux.
No charge for package.
Bbls. about 500 lb, ₩ lb.....3¢
½ bbls., about 300 lb, ₩ lb.....3½¢
Kegs, about 110 lb, ₩ lb..... .3½¢
Kegs about 55 lb, ₩ lb..... .....4¢
Yager's Soldering Salts.
1 lb bottles, each.....60%
5 lb bottles, ₩ lb.....40%

Soldering Coppers—

Per lb..... ....22@24¢

Spelter—

Western Spelter.. .....4.45@4½¢

Spiral Pipe—See *Conductors.*

Stove Pipe Elbows—See *Elbows, Stove Pipe.*

Stove Trucks—See *Trucks, Stove*

Strainers, Conductor—

Galvanized..... .....50%

Tin Pigs and Bars—

Banca, pigs, ₩ lb..... .....28 @28¼¢
Straits, pigs, ₩ lb.....27¾@28 ¢
Straits, in bars, ₩ lb..... .....28½@29 ¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.
Calland Grade:
IC, 14 x 20..... ....$8.25
IX, 14 x 20.... . .... 9.75
IXX, 14 x 20.....11.00
IXXX, 14 x 20.....12.25
IXXXX, 14 x 20.....13.50
Melyn Grade:
IC, 14 x 20..... ..... 7.75
IX, 14 x 20..... .... 9.25
IXX, 14 x 20. ....10.50
IXXX, 14 x 20 ....11.75
IXXXX 14 x 20.... .....13.00
Allaway Grade:
IC, 14 x 20..... .... 7.25
IX, 14 x 20 .... 8.35
IXX, 14 x 20..... .... 9.45
IXXX, 14 x 20.....10.55
IXXXX, 14 x 20. .....11.65

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight } IC, 14 x 20.....$7.00@7.25
" " IX, 14 x 20.....$7.75@8.00

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:
100 lb.....15¢
95 lb.....20¢
90 lb.....25¢
85 lb.....30¢

Terne Plates—

N. B.—The following prices are for IC, 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 lb coating and $2.50 to $3.00 advance for 15 lb and upward.
About 40 lb coating..... $18.50@19.00
About 30 lb coating..... 17.75@18.25
About 20 lb coating..... 15.75@13.25
About 15 lb coating..... 13.75@14.25
About 8 lb coating..... 12.50@13.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)..... $16.00
IXX, 14 x 28..(112 sheets)..... 17.00
IXX, 14 x 31..(112 sheets)..... 18.50

Troughs Eave—See *Eave Trough*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00
Steel Lock Frame, per doz..... 18.00
Daisy Improved pattern, ₩ doz... 18.00

Tubing—

Tin.....50% | Galvanized.....50%
Fittings for do.....40%

Zinc—

600 lb casks ₩ lb..... .....6¾¢
Per lb.....7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Fittings—

List of Oct 7, 1899

Cast Iron Fittings, Black and Galvanized, Standard sizes.....60@60&10
Cast Iron Bushings and Plugs....65@66⅔%
Cast Iron Flanges.....65@66⅔%
Malleable Iron Fittings.....45@50%
" " Bushings.....65@66⅔%
" " Unions.....65@66⅔%
Wrought " Nipples.....65@66⅔%
" " Couplings.....65@66⅔%
" " Long Screws.....65@66⅔%

Cast Iron Soil Pipe—

List Feb. 25, 1901.
2 to 6 inch inclusive.
Standard.....55&10@60%
Extra Heavy.....65@65&10%
All Fittings.....70&5@70&10%

Merchant Wrought Iron Pipe—

List Feb. 15, 1900
Random Lengths.

	Black	Galv
⅛ to ⅛ inch.....	45@50%	35%
¼ to 10 inch.....	50&10%	40%
11 and 12 inch.....	50%	35%

Extra Strong Pipe—

Random Lengths.

	Black	Galv.
⅛ to ⅛ in.....	45%	30%
¼ to 2 in.....	45%	30%
2½ to 8 in.....	45%	30%

Valves Cocks, &c.—

Iron Body Valves.....65&5@70%
Air Cocks and Radiator Air Cocks..... 70@70&5%
Soldering Unions.....70@70&5%
" Nipples .....70@70&5%
Brass Unions (Rough and Finished).. 65&5@70%
Jenkins Bros.':
Iron Body Valves, except Gate Valves 55%
All Iron Valves, except Gate Valves.. 40%
Iron Body Gate Valves. 50%
All Iron Gate Valves.... .....35%
Iron Cocks, all Iron.....60&10%
" " with Brass Plugs.....60%
Brass Globe, Angle and Cross Valves... 65@65&10%
" and Angle Valves, hose outlet..... 65@65&10%
Brass Garden Hose Valves....65@65&10%
" Horizontal, Vertical and Angle Check Valves.....65@65&10%
Brass Safety Valves.....55%
" " " Low Pressure....55%
Brass Radiator Valves.....65@65&10%
" " Jenkins..... ... 55%
Brass Jenkins' Globe, Angle, Cross and Corner Valves.....55%
Brass Jenkins' Safety and Check Valves..... 40%
Brass Jenkins' Gate Valves.....50%
Brass Steam Cocks.....65@65&10%
" Gas Meter and Union Meter Cocks.....65@65&10%
Brass Fittings, Rough.....65@65&5%
" " Finished.....65@65&5%
" Bushings.. .....65@65&10%

Plumbers' Brass Work—

List of December 7, 1896.

Ground Key Work:
Rough Bibs and Stops.....65@65&5%
Finished Bibs..... ....60@60&5%
Rough Stop and Stop and Waste Cocks.....65&5@70%
Rough Stop and Stop and Waste Cocks, Patented.....60@60&5%
Compression Bibs.....65@65&5%
" " Flanged.....65&10%
Compression Bath Cocks and Doub'e Bath Cocks..... .....65@65&5%
Compression Basin Cocks .....65@65&5%
Fuller Bibs.....70@70&5%
Fuller Basin Cocks, Nos. 1 to 4.70@70&10%
Fuller Bath Cocks, No. 4½.....$2.25 net
Chain Stays.....60@60&5%
Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face....₩ set	$1.00	$1.10
Ground Face..₩ set	$1.05	$1.15

Basin Plugs.....60@60&10%
Sink or Bath and Wash Tray Plugs.... 60@60&10%
Basin Clamps.....70@70&10%

Bath Tubs—

Cast Iron Enamelo Bath Tubs.
List of March 26, 1900.
Regular Patterns. Guaranteed, Complete Line.....30&10@40%
All High Grade and Special Pattern (except as below).....20%
"Diana" and "Brighton."".....20%
Non-guaranteed Brands, complete line 40%
Steel Clad Copper Lined Bath Tubs, list of Feb. 1, 1899.....45@50%
Solid Porcelain Bath Tubs.....20%
Solid Copper, list of Feb. 1, 1899.....30%

Boilers—

Standard Boilers:
30 gal.....65@65&10%
35 and 40 gal.....65@65&5%
Other sizes up to 52 gal....50&10@60%
52 gal. and above.....50&10@60%
Extra Heavy Boilers:
18 to 52 gal..... 50&10@60%
53 gal. and above..... ....40&10@45%

Sinks—

	Cast Iron—Black.	Galv.
Sinks, Square, Half Round and Corner.	50&5%	50&10@60%
Sink Legs.	50&5%	50&10@60%
Sink Backs.....	50&5%	50&10@60%

Wrought Steel—

New Era, Galv'd and Enameled. ..70&5%
New Era, Painted.....50&10%
L. & G.....50%

Miscellaneous—

Earthenware, List of July 17, 1899..... Basins, Urinals and Hoppers..... 40%
Closet Bowls, Sundries, Washouts and Pedestals.....40%
Drawn Lead Traps, List of June 3, 1901.....40&10@50%

ALPHABETICAL LIST OF ADVERTISERS.

Adler, H. Co..... 14
American Hardware Mfg.Co. 77
American Sheet Steel Co....1&72
American Tin Plate Co. 72
Arcade Mfg. Co..... 30
Armstrong Mfg. Co..... 35
Asheville Mica Co..... 33
Asphalt Ready Roofing Co .. 73
Atlas Radiator Pedestal Co... 28
Auld & Conger..... 68
Barstow Stove Co..... 80
Beckwith, P. D., Est. of..... 2
Berger Bros. Co.....30&69
Berger, L. D..... 76
Berger Mfg. Co 74
Bergstrom Bros. & Co..... 26
Bertsch & Co..... 73
Bliss, E. W. Co..... 78
Blodgett, G. S. Co..... 17
Boynton Furnace Co..... 6
Brand Stove Co..... 25
Bray, J. & Co..... 68
Bridgeport Crucible Co..... 31
Bridgeport Stove Works..... 29
Brien Heater Co..... 28
Brohard Co..... 30
Brooklyn Metal Ceiling Co.... 70
Bruce & Cook.....73&80
Burton, W. J. & Co.... 76
Butler Steel Furnace Co..... 29
Callahan, Geo. & Co..... 69
Canton Steel Roofing Co..... 75
Carroll, J. B..... 34
Castle, Wilmot & Co..... 26
Champion Steel Range Co.... 17
Cheney, S. & Son 1
Cincinnati Stamping Co....28&76
Clark, Henry N. Co..... 30
Clark Novelty Co..... 67
Clark, Quien & Morse..... 71
Clason Arch. Metal Works... 68
Clayton & Lambert Mfg. Co.. 31
Clough, R. M..... 79
Colebrook, W. H. Sons & Co. 33
Colwell Lead Co..... 34
Connors, Wm. Paint Mfg. Co. 70
Cooney & Geiger..... 69
Co-operative Foundry Co..... 10
Cope, Geo. W 33
Cortright Metal Roofing Co... 76
Crosby Steam Gage & Valve Co..... 1
Crown Ventilator Co..... 69
Curtis & Curtis Co..... 35
Dangler Stove & Mfg. Co..... 17
Danville Stove & Mfg Co..... 18
Dean Boiler Co..... 29
Detroit Stove Works..... 15
Dighton Furnace Co.....1&23
Dixon, Jos. Crucible Co..... 29
Double Truss Cornice Brake Co 76
Dowman Mfg. Co..... 69
Drake, W. H..... 24
Drouve, G. Co..... 73
Edwards J. H..... 34
Eller, J. H. & Co..... 75
Energy Elevator Co..... 35
Enterprise Stove Co..... 14
Esterbrook's, R. Sons..... 35
Excelsior Stove Mfg. Co..... 15
Farnan Brass Works..... 36
Fenn, Geo. E..... 69
Floyd, Wells & Co..... 25
Follansbee Bros. Co..... 1
Forest City F'dry & Mfg. Co.. 24
Foster, F. W. Mfg Co..... 35
Friedley & Voshardt..... 74
Frink, I. P..... 80
Front Rank Steel Furnace Co 21
Fuller & Warren Co..... 1
Galesburg Cornice Works.... 76
Galt, John & Sons..... 68
Galusha Stove Co..... 9
Garry Steel & Iron Co..... 73
Garvin Machine Co 76
Genuine Bangor Slate Co..... 68
Globe Ventilator Co..... 69
Gobeille Pattern Co..... 33
Gordon, W. J..... 79
Gorton & Lidgerwood Co..... 1
Greene, W. F., Est. of..... 32
Gummey, McFarland & Co... 71
Gurney & Co..... 15
Gurney Heater Mfg. Co. 25
Hamlin, G. R..... 63
Harrington & King Perforating Co..... 62
Hart & Crouse Co..... 22
Hessler, H. E. Co..... 31
Hoffman, Geo. W..... 30
Howes, S. M. Co.....19, 30&33
Howson & Howson 67
Hungerford, U. T., Brass & Copper Co..... 79
Independent Register Co..... 27
International Correspondence Schools..... 67
International Heater Co..... 3
Janney, Steinmetz & Co..... 63
Jenkins Bros..... 1
Johnson, E. J. & Co..... 68
Joliet Stove Works..... 16
Keene, Geo. C. & Co 79
Kelsey Furnace Co..... 38
Kemp, C. M. Mfg. Co..... 34
Kewanee Boiler Co..... 23
Kieley & Mueller..... 1
Koven, L. O. & Bro..... 36
Lamb & Ritchie..... 35
Landers, Frary & Clark..... 36
Lawrence-Letts Elbow Co.... 32
Lennox Machine Co..... 27
Livermore, H. F..... 35
McClure & Co..... 80
McLain, J. H. Co..... 27
McLeod & Henry Co..... 1
Magee Furnace Co .....1&21
Marcy Stove Repair Co..... 31
Marlin & Co..... 74
Marston, I. G. & Co..... 34
Meilink Mfg. Co..... 34
Meurer Bros. Co..... 71
Meyer, F. & Bro. Co 25
Michigan Stove Co.....4&5
Miliar, Chas. & Son Co..... 39
Miner & Peck Mfg. Co 33
Montross Metal Shingle Co.... 76
Morgan & Co..... 36
Mueller, L. J. F'ce Co..... 22
Munsell, E. & Co..... 33
National Enameling & Stamping Co..... 38
National Pipe Bending Co.... 24
New Haven Novelty Machine Co 36
Newton, Wm. M..... 1
New York Iron Roofing & Corrugating Co..... 71
New York Trade School..... 66
Niagara Machine & Tool Wks. 77
Nickel Plate Stove Polish Co. 32
Noyes & Nutter Mfg. Co..... 24
O'Halloron & Jacobs..... 68
Ohl, Geo. A. & Co..... 78
Osborn, J. M. & L. A 78
Ostrander, W. R. & Co..... 79
Palermo Mica Co..... 33
Peck, Stow & Wilcox Co..... 77
Perkins, J. L. & Co..... 31
Phila. Machine Tool Co..... 77
Pierce, Butler & Pierce Mfg. Co..... 28
Pittsburgh Stove & Range Co. 8
Pocock, Oliver..... 77
Portsmouth Stove & Range Co. 11
Presbrey Stove Lining Co..... 31
Reeves Mfg. Co..... 70
Resor, Wm. & Co..... 8
Rhodes, L. E. Co..... 34
Richmond Stove Co..... 29
Ringen Stove Co..... 7
Robinson, J. M. & Co..... 79
Rochester Radiator Co..... 26
Rutland Fire Clay Co..... 32
Sackman, F. A..... 67
Safety Furnace Pipe Co..... 26
Salem Nail Co..... 69
Sanborn, John..... 73
Sannders', D. Sons..... 35
Schaffer, John P..... 27
Schill Bros. Co..... 15
Schratwiesers Metal Lath Works..... 73
Schulte, John A. & Co..... 11
Schwab, R. J. & Sons Co..... 23
Schwerdtle Stamp Co..... 68
Seavey Mfg. Co..... 28
Sheppard, Isaac A. & Co..... 1
Sill Stove Works.....12&13
Silver & Co..... 67
Smith, H. B. Co..... 20
Smith & Anthony Co..... 80
Smith & Thayer Co 22
Smith-Warren Co..... 70
Special Notices..... 66
Sperry, D. R. & Co..... 67
Stamford Foundry Co..... 28
Standard Lighting Co..... 14
Stanton Heater Co..... 21
Stiles & Parker Press Co..... 78
Stocking, E. B..... 67
Stolz, Frank D..... 24
Stuber & Kuck..... 29
Taylor Co., N. & G..... 80
Taylor & Boggis Fdry. Co.... 30
Tinnerman Steel Range Co... 27
Townley, H. P..... 66
Trimont Mfg. Co..... 36
Troy Nickel Works..... 31
Tubular Heating & Ventilating Co..... 19
Union Mfg. & Specialty Co .. 78
Valentine, M. D. & Bro. Co... 31
Van John, Range Co..... 6
Vance Boiler Works..... 24
Vanderman Plumbing & Heating Co..... 34
Vedder Pattern Works..... 33
Vogel, William & Bros 67
Vulcan Metal Refining Co.... 66
Vulcan Western Co..... 66
Walker & Pratt Mfg. Co..... 9
Washburne, E. G. & Co.....69&73
Watson, Jas. H. Est..... 75
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Weir Stove Co..... 80
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Wireton Heating Co..... 27
Wister, L. & R. & Co 80
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Roofing Cement and Paint.
Callahan, Geo. & Co., 218 Front Street, N. Y.
Connors, Wm Paint Mfg. Co., Troy, N. Y.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Perkins, J. L. & Co., Chicago.

Roofing and Siding, Iron and Steel, Corrugated and Plain.
Berger Mfg. Co., Canton, O.
Burton, W. J. & Co., Detroit, Mich.
Canton Steel Roofing Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Garry Steel & Iron Co., Cleveland, O.
Gummey, McFarland & Co., Phila., Pa.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Roofing Nails.
Salem Nail Co., 279 Pearl St., N.Y.

Roofing Slate.
Auld & Conger, Cleveland, O.
Bray, J. & Co., E. Bangor, Pa.
Galt, John & Sons, 253 Broadway, N.Y.
Genuine Bangor Slate Co., Easton, Pa.
Johnson, E. J. & Co., 38 Park Row N.Y.
O'Halloran & Jacobs, Pittsburgh, Pa.

Sashes, Metal.
Smith-Warren Co., Boston, Mass.

Schools and Colleges.
International Correspondence Schools, Scranton, Pa.

Screens.
Harrington & King Perforating Co., Chicago, Ill.

Shears, Sheet Metal
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.

Sheet Metal Machinery.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland Conn.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Garvin Machine Co., 257 Spring Street, New York.
Keene, Geo. C. & Co., Cincinnati, O.

SEE ALPHABETICAL INDEX, PAGE 62.

Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Pocock, O., Cincinnati, O.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.

Sheets, Galvanized.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O.
Taylor, N. & G. Co., Philadelphia, Pa.
Wood Alan Co., Philadelphia, Pa.

Sheets, Iron and Steel.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Taylor, N. & G. Co., Philadelphia, Pa.
Wood Co., Alan Philadelphia, Pa.

Shingles and Tiles, Metallic.
Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.

Shot.
Colwell Lead Co., 63 Centre St., N. Y.

Siding. *(See Roofing and Siding.)*

Skylights.
Canton Steel Roofing Co., Canton, O.
Trouve, G. Co., Bridgeport, Conn.

Slaters' Tools.
Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

Snow Guards.
Clason Arch. Metal Works, Providence, R. I.

Solder.
Bruce & Cook, 186 to 190 Water St., NY.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Sanborn, J., 217 Water St., N. Y.
Taylor, N. & G. Co., Philadelphia Pa.

Speaking Tubes and Whistles.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.

Specialties, Sheet Metal.
Vogel, Wm. & Bros., Brooklyn, N. Y.

Stamping, Sheet Metal.
American Hardware Mfg. Co., Ottawa, Ill.

Steam and Gas Fitters' Supplies.
Curtis & Curtis Co., Bridgeport, Conn.

Steam and Water Engineering and Regulating Specialties.
Kieley & Mueller, 7-11 West 13th St., N. Y.

Steel Stamps and Stencil Dies.
Hackman, F. A., Cleveland, O.
Schwerdtle Stamo Co., Bridgeport, Ct.

Stop and Waste Cocks.
Landers, Frary & Clark, New Britain, Conn.

Stove Cement.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Stove Linings.
Bridgeport Crucible Co., Bridgeport, Conn.
McLeod & Henry Co., Troy, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Newton, W. M., Albany, N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Stove and Metal Polish.
Hoffman, Geo. W., Indianapolis, Ind.
Nickel Plate Stove Polish Co., Chicago, Ill.
Rutland Fire Clay Co., Rutland, Vt.

Stove Patterns.
Cope, G. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, O.
Vedder Pattern Works, Troy, N. Y.

Stove Pipe.
Reeves Mfg. Co., Canal Dover, O.
Stuber & Kuck, Peoria, Ill

Stove Pipe Thimbles.
Cheney, S. & Son, Manlius, N. Y.

Stove Repairs.
Clark, Henry N. Co., Boston, Mass.
Hessler, H. E. Co., Syracuse, N. Y.
Howes, S. M. Co., Boston, Mass.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trimmings, &c.
Greene, W. F., Est. of, Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trucks.
Arcade Mfg. Co., Freeport, Ill.
Hessler, H. E. Co., Syracuse, N. Y.
Howes, S. M. Co., Boston, Mass.

Stoves and Ranges.
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Bridgeport Stove Works, Bridgeport, Ia.
Champion Steel Range Co., Cleveland, Ohio.
Co-operative Foundry Co., Rochester, N. Y.
Danville Stove & Mfg. Co., Danville, Pa.
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass
Enterprise Stove Co., Vincennes, Ind.
Excelsior Stove Mfg. Co., Quincy, Ill.
Floyd, Wells & Co., Royersford, Pa.
Fuller & Warren Co., Troy, N. Y.
Galusha Stove Co., Rochester, N. Y.
Gurney & Co., Boston, Mass.
Joliet Stove Works, Joliet, Ill.
Magee Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Portsmouth Stove & Range Co., Portsmouth, O.
Resor, Wm. & Co., Cincinnati, O.
Richmond Stove Co., Norwich, Conn.
Ringen Stove Co., St. Louis, Mo.
Schill Bros. Co., Crestline, O.
Schulte, John A. & Co., Cincinnati, O.
Shooaard, Isaac A. & Co., Phila., Pa.
Sill Stove Works, Rochester, N. Y.
Smith & Anthony Co., Boston, Mass.
Stamford Foundry Co., Stamford, Ct.
Tinnerman Steel Range Co., Cleveland, Ohio.
Van John, Range Co., Cincinnati, O.
Walker & Pratt Mfg. Co., Boston, Mass
Weir Stove Co., Taunton, Mass.

Stoves and Ranges, Gas.
Adler, H. Co., Pittsburgh, Pa.
Co-operative Foundry Co., Rochester, N. Y.
Dangler Stove & Mfg. Co., Cleveland, Ohio.
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Ringen Stove Co., St. Louis, Mo.
Standard Lighting Co., Cleveland, O.

Stoves and Ranges, Oil, Vapor and Gasoline.
Dangler Stove & Mfg. Co., Cleveland, Ohio.
Hessler, H. E. Co., Syracuse N. Y.
Ringen Stove Co., St. Louis Mo.
Standard Lighting Co., Cleveland, O.

Street Lamps, Gasolene.
Merkel, H., St. Louis, Mo.

Tanks, Steel and Wood.
Edwards, J. H., 59 Park Place, N. Y.

Terne Plates.
American Tin Plate Co., New York.

Tinners' Tools, Machines and Supplies.
Berger, L. D., Philadelphia, Pa.
Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y.

Tinners' Trimmings.
Vogel, Wm. & Bros. Brooklyn, N. Y.

Tin Plate.
American Tin Plate Co., New York.
Berger, L. D., Philadelphia, Pa.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

Tin Scrap.
Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co., Streator, Ill.

Tool Grinders.
Union Mfg. & Specialty Co., Buffalo, N. Y.

Tools and Machines, Steam and Gas Fitters'.
Armstrong Mfg. Co., Bridgeport, Conn.
Curtis & Curtis Co., Bridgeport, Conn.
Livermore, H. F., Boston, Mass.
Saunders', D. Sons, Yonkers, N. Y.

Torches, Plumbers.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Trade Schools.
New York Trade School, First Ave., 67th and 68th Sts., New York.

Valves.
Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Morgan & Co., Chicago.

Ventilators and Chimney Caps.
Berger Bros. Co., Phila., Pa.
Crown Ventilator Co., Milwaukee, Wis.
Dowman Mfg. Co., Atlanta, Ga.
Fenn, Geo. E., Boston Mass.
Globe Ventilator Co., Troy, N. Y.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Washers, Valves, &c.
Marston, I. G. & Co., Boston, Mass

Washing Machines.
Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

Water Coolers.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Water Closets.
Colwell Lead Co., 63 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.

Water Heaters.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Water Lifts.
Rhodes, L. E. Co., Hartford, Conn.

Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

Window Frames, Metal.
Smith-Warren Co., Boston, Mass.

SEE ALPHABETICAL INDEX, PAGE 62.

THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

Published Weekly at the Following Subscription Price:

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DAVID WILLIAMS COMPANY, Publishers,

232, 234, 236 and 238 William Street, NEW YORK. 805 Fisher Building, CHICAGO.

New York (Main Office),	232-238 William Street,	JOHN S. KING, General Manager.
Philadelphia,	Forrest Building, 117-119 South Fourth Street,	THOMAS HOBSON, Manager.
Pittsburgh,	Hamilton Building, 335 337 Fifth Avenue,	ROBERT A. WALKER, Manager.
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LONDON OFFICE: Hastings House, Norfolk Street Strand.

AUSTRALIAN OFFICES: Melbourne, Hardware Chambers, 231 Elizabeth Street; Sydney, Paling's Buildings.

Remittances should be made by draft, payable to the order of DAVID WILLIAMS COMPANY, on any banking house in the United States or Europe, or by P. O. Money Order on New York. When these cannot be obtained, postage stamps of any country will be received.

Newsdealers or Booksellers in any part of the world may obtain *The Metal Worker* through The American News Company, New York, U. S. A.; The International News Company, New York, U. S. A., and London, England; or The San Francisco News Company, San Francisco, Cal., U. S. A.

Entered at the Post Office, New York, as Second-class Matter.

LABOR EXCHANGE.

Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should aot be inclosed with replies to advertisements appearing in these columns, as they are frequeatly mislaid and lest. A copy of the reference will serve the purpose.

HELP WANTED.

SALESMAN visiting the hardware trade to sell stove repairs as a side line. Box 130, care *The Metal Worker,* 1205 Fisher Building, Chicago, Ill. Aug. 17

A good all around man; one who understands tinning and plumbing; sober; a steady job to the right party; state age and wages expected. James Fitzgibbon, Red Bank N. J. Aug. 17

A good, sober TINNER between 28 and 35 years of age wanted; experienced in roofing, shop jobbing, cistern, pump work, &c.; fair wages paid; give references. Schroeder Bros., St. Paul, Minn. Aug. 17

First-class CORNICE MAKERS able to do outside and inside work and raising; steady work and good wages to the right parties. Providence Cornice Company, 3 Charles street, Providence, R. I. Aug. 17

One or two all around workmen at once for tin and plumbing work. Rock Island Hardware Company, Derby Line, Vt. Aug. 17

A CORNICE MAKER; man who thoroughly understands cornice work, slate work and general tin and job work; steady work and good wages to the right man; no one but a mechanic need apply. Swanger & McClain, 206-208 S. Washington street, Marion, Ind. Aug. 17

Three CORNICE and SKYLIGHT MAKERS; men who can take out and complete contracts from drawings; no tinsmith pretending to be a cornice man need apply. The National Sheet Metal Roofing Company, 339 and 345 Grand street, Jersey City, N. J. Aug. 17

Four TIN ROOFERS; men of experience in outdoor sheet metal work; eight hours and union wages. The National Sheet Metal Roofing Company, 339 and 345 Grand street, Jersey City, N. J. Aug. 17

A PLUMBER with plenty of experience, good reference and habits; would like one that has some tin and furnace work experience; correspondence solicited at once. Taylor Bros., Adrian, Mich. Aug. 17

At once, five or six first-class TINSMITHS; men accustomed to cornice work preferred. Apply at once to E. H. Friedrich, Holyoke, Mass. Aug. 17

SLATER and TINNER: state wages required and experience to Blowers & Smith, 252 West Main street, Springfield, Ohio. Aug. 17

TINSMITH and SHEET METAL WORKER at once; young man just out of his trade preferred; must be strictly temperate and a good mechanic; a steady job to the right man; state wages expected, experience and references. W. J. Taber, Holland, N. Y. Aug. 17

Two or three CORNICE MAKERS for in and outside work; must be hustlers; good wages; apply at once or ready for work. Newburgh Cornice Works, Newburgh, N. Y. Aug. 10

First-class CORNICE and SKYLIGHT MAKER; steady job, good wages, eight hours, for the right man. Rourke Bros., New Haven, Conn. Aug. 10

Wanted at once, a first-class TINNER; one who has a thorough knowledge of hot air furnaces, to install work, &c.; state age, experience and salary expected. L. P. Willward, Lexington, Ky. Aug. 10

FOREMAN who understands cornice, skylight and sheet metal business, cut patterns, who can handle men; sober and a hustler; state wages expected; answer at once. J. Walsh, 1455 St. Clair street, Cleveland, Ohio. Aug. 10

A first-class TINNER who can do all kinds of roofing, bench work, furnace work and general jobbing; position is good the year around; prefer a man who can do plumbing. East End Hardware Company, Sunbury, Pa. Aug. 10

SALESMAN (traveling) visiting the plumbing trade to handle a very salable specialty as a side line; liberal arrangements will be made with the party. Necessity Mfg. Company, 356 Bleecker street, New York. Aug. 10

TINNER and PLUMBER; must be sober and reliable; steady work at $2.25 a day. C. M. Dorr, Hoosick Falls, N. Y. Aug. 10

TINSMITH for shop work, roofing and furnace work; steady work for a competent man; give experience and wages wanted. J. H. Brown, 372 North street, Rochester, N. Y. Aug. 10

Two PLUMBERS and GAS FITTERS; steady work to right parties; $3 for nine hours. The Parkersburg Supply & Plumbing Company, Parkersburg, W. Va. Aug. 10

A SALESMAN for Western New York territory; one who has an acquaintance with trade in that section, and who can show good references. "Western," care *The Metal Worker,* New York. Aug. 10

A thorough up to date STEEL RANGE worker; steady position, good place to right man; only a good man will be considered. "R. F. G.," care *The Metal Worker,* Cincinnati, Ohio. Aug. 10

Good man for inside and outside general all around tinsmith work; must be able to do all kinds of cornice and skylight work, cut his own patterns and take care of job when aecessary; right man will find steady position all year around at moderate wages; if not able to call write stating what wages are expected and what work in particular you are able to do to Osmar Poeschel, 606-614 Spring street, West Hoboken, N. J. Aug. 10

SITUATIONS WANTED.

By SALES MANAGER thoroughly acquainted with hardware, plumbing and sheet metal trade east of Mississippi River and possessing a good knowledge of machinery; possessed of energy, a systematic worker, accustomed to handling difficult propositions; connection desired with large house or one wanting a man of executive ability and exceptional address; habits correct and salary of less immediate importance than opportunity. W. Aspdin, Hasbrouck Heights, N. J. Aug. 17

By a first-class man of large experience in the cornice, skylight and sheet metal works, also as a draftsman and pattern cutter; would like to communicate with a reliable firm; position wanted as MANAGER and SUPERINTENDENT to take the entire charge of a shop; will furnish best of reference. Address "N. B.," care D. Pytagoras, 143 West 113th street, New York. Aug. 17

Experienced TIN ROOFER, accustomed to cornice work, plumbing and slate roofing, &c.; willing to work anywhere; ability to hold responsible position; strictly sober man. H. Belmont, 583 Third avenue, New York. Aug. 17

By a TINNER and FURNACEMAN; 15 years at the trade; would like a steady place; can give best of reference. "Tinner," P. O. Box 135, Paris, Ill. Aug. 17

A Japanner, all around man, wants a position as FOREMAN; understands all branches of the business and can furnish first-class references. Geo. Gumbel, 3020 Rudd avenue, Louisville, Ky. Aug. 17

Gentleman with 15 years' experience on the road desires position with concern making either steel ranges or gasoline stoves. "W. B. K.," care *The Metal Worker,* 1205 Chemical Building, St. Louis, Mo. Aug. 17

As SUPERINTENDENT of stove or gray iron foundry; understand the business thoroughly in all its details. "Kennedy," care *The Metal Worker,* New York. Aug. 17

PLUMBER or ROOFER'S HELPER wishes position; understands business thoroughly, also furnaces and ranges; can furnish best of reference. H. Jacobsen, 337 East Thirty-seventh street, New York. Aug. 17

Young man with 12 years' experience at galvanizing desires a position; best of reference. J. W. Germond, 25 E. Heath street, Baltimore, Md. Aug. 17

PLUMBER wishes work; can do a little roof, range and furnace work; also steam fitting. "A. K.," care P. Stecker, 246 Floyd street, Brooklyn, N. Y. Aug. 17

First-class PLUMBER wishes a steady position in city or country; can furnish A1 reference. James Godsill, care Thos. J. Walsh, 1071 First avenue, New York. Aug. 17

TRAVELING SALESMAN acquainted with Pennsylvania, New Jersey and Delaware trade, desires to change; thoroughly competent in all branches. "H. L. V.," General Delivery, Philadelphia, Pa. Aug. 17

By a first-class all around TIN and SHEET IRON WORKER; 14 years' experience in all branches; practical draftsman, long experience cutter; graduate of New York Trade School; erect new work and estimate from plans; married man, sober and honest; steady work for one year, city or country; wages moderate. George E. Miller, Sanford, Maine. Aug. 17

Steady position as PLUMBER and GAS FITTER; have had considerable experience at tin work, especially outside, steam and hot water fitting; am strictly temperate, using neither liquor nor tobacco in any form; 30 years of age and married; have had several years' experience and can furnish the best of reference from former employers. "Plumber," 400 Linden place, Elmira, N. Y. Aug. 17

With a reliable house heating firm, a steady position as a STEAM and HOT WATER FITTER; am strictly temperate and reliable; have had 15 years' experience at tbe business. Please address with full particulars Frank Pierce, General Delivery, Worcester, Mass. Aug. 17

As PLUMBER and GAS FITTER by young man, single; nine years' practical experience in a general line of plumbing work; reference. John Mullen, 80 Ellison street, Paterson, N. J. Aug. 17

TINNER; good all around man; 18 years' experience; German. "Bissinger," 430 West Fortieth street, New York. Aug. 17

By an experienced STOVE SALESMAN a position with good firm, New England territory preferred; a temperate young man and a hustler; let me hear from you. "Business," care *The Metal Worker,* New York. Aug. 17

A man thoroughly acquainted with the radiator and boiler business and the heating trade and architects in New York and vicinity would like to engage with good house; would handle a good line on commission; habits correct; references exchanged. "P. R. J.," care *The Metal Worker,* New York. Aug. 17

STEAM FITTER; first-class; able to estimate from plans, lay out work, take charge heating or power work; good solicitor, A1 mechanic; city or country. "Construction," care *The Metal Worker,* New York. Aug. 10

A good all around workman at TINNING and PLUMBING: experienced in city and country work. Lester Hemenway, Pittsfield, Mass. Aug. 10

By a practical PLUMBER and GAS FITTER; 15 years' experience; can estimate from plans and plan work; strictly reliable and up to date. John Williams, General Delivery, Watertown, N. Y. Aug. 10

PLUMBER and TINSMITH would like a position, city or country. "Doellner," Bronxville, N. Y. Aug. 10

Youth, 19, respectable, who has had experience in skylight and cornice work, wishes to get into some good sheet metal and furnace shop as finisher. Care Miss Eger, Rockaway Road, Centreville avenue, Ozner Park, L. I. Aug. 10

By a practical PLUMBER, GAS and STEAM FITTER; a neat and quick lead worker; capable of doing all kinds of work pertaining to the trade of a plumber; strictly sober and reliable; a hustler and up to date; will go to work on trial; best of reference given from last employer; had 12 years' experience. "Plumber," 50 Mill street, Watertown, N. Y. Aug. 10

Young man with 12 years' experience in hardware store and tin shop, up to date in furnace business, with best of reference, desires position. W. H. Barrett, 424 West Thirteenth street, Kansas City, Mo. Aug. 10

Practical TIN and SHEET IRON WORKER, any kind, inside or out, piece or day, or general jobbing shop. H. Smith, 284 Third avenue, New York. Aug. 10

Steady employment year around, by a reliable TINSMITH; understands pump, pipe work, wind mill and steam fitting; sober and steady; wages, $10 per week for steady position. "S. T.," South Deerfield, Mass. Aug. 10

As SUPERINTENDENT or HEAD FOREMAN in refrigerator factory; have eight years' experience, thoroughly understanding refrigeration and construction; also copper bar work and special sheet metal fixtures; am a first-class sheet metal worker and cutter; handle help successfully and economically; age 37 and married; strictly temperate and give best of reference; will start in at $1000 per year; will go anywhere. Care *The Metal Worker, New York.* Aug. 10

Practical PLUMBER wants work, city or country; wages moderate; references. Joseph Fitz Patrick, 224 East Fifty-sixth street, New York. Aug. 10

By first-class PLUMBER and GAS FITTER; sober, reliable and will work for his employer's best interests; can estimate from plans and plan capable of taking charge of work; am not afraid of work; satisfaction guaranteed as to my ability as a mechanic; correspondence solicited; Massachusetts or Connecticut preferred. William Nolan, plumber, Watertown, N. Y. Aug. 10

Big Chance for a Wideawake Plumber and Steam Fitter.

FOR SALE.

An established Plumbing and Steam Fitting business, located on Hudson River, within easy distance of New York City, in a town of 6,000 inhabitants; water works, gas, electric lights, trolley, six manufactor es and others in course of construction using steam power. Building located centre of principal street, basement fitted up for workshop, has machine cutting pipe up to 6 inch. Bench and tools for tinsmithing, bench for plumbing and pipe fitting. Main floor fitted for plumbing and steam fitting supplies, two floors above—living apartments. A big opportunity for a wide awake practical Plumber and Steam Fitter Best of reasons for selling Stock can be reduced to suit convenience of purchaser.

Address "SUPPLIES,"
Box 817, care *The Metal Worker*, New York.

FOR SALE.

Old established reliable Plumbing and Tin business. Store connected. Machines newest style. Will invoice $2,500. Good opportunity for industrious man. Cause of selling, ill health.

"F. D,"
care *The Metal Worker*, New York.

TO SELL.

A good business opportunity. A business on its feet and for a little money. New and second hand stoves, tin work, repairing and plumbing. Some hard work Can enlarge all you want to. Present invoice about $400. Address

B. F. HATHAWAY,
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Chicago.

For Sale.

Tin Shop, with small stock of dairy goods, stoves, &c; dairy country, mfg. city; established 14 years. Also milk cooler business. Will sell or rent store. Apply to H. W. GAZLAY,
97 Groton Ave., Cortland, N. Y.

I Desire to Purchase

N. P. Steel Brackets, N. P. Iron Brackets, also Grey Iron Castings.
Manufacturers interested, address
"LARGE QUANTITY,"
care *The Metal Worker*, New York.

WANTED.

A responsible boiler foundry to manufacture a horizontal sectional cast iron boiler having push nipple connections This boiler has been on the market for the past four years. The patterns are made from cast iron, with all necessary core plates, iron flasks, jigs, &c.
DAVIDSON HEATING & CONSTRUCTION CO.,
Hanover, Pa

FOR SALE,

On account of interests elsewhere, I offer for sale an old-established, first-class Plumbing, Tinning and Stove business in good location and plenty of work.

GEORGE MORTON,
Ansonia, Conn.

Business For Sale.

In growing village of 6,000 inhabitants. A Stove, Tin, Hardware, Sporting Goods and House-furnishing business. Rooms also for a Plumber's shop; have been used as such. Will be sold cheap for cash, or part cash and part notes. Reasons for selling. Write to

BOX 157, Hoosick Falls, N. Y.

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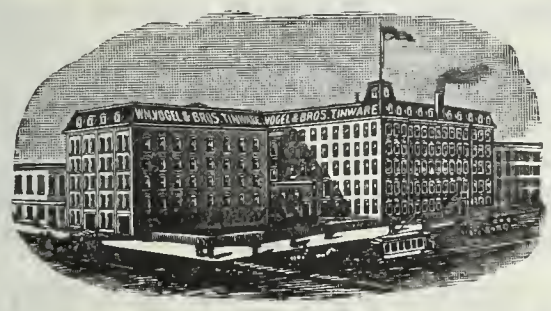

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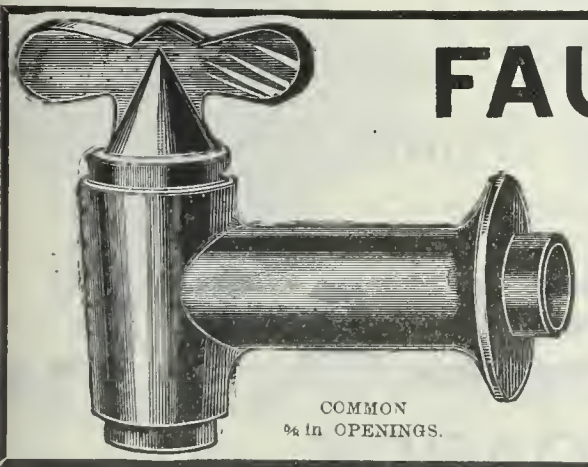

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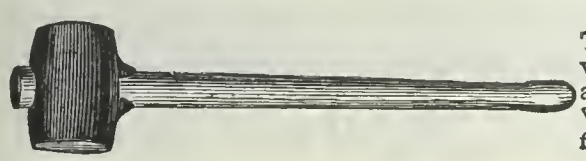

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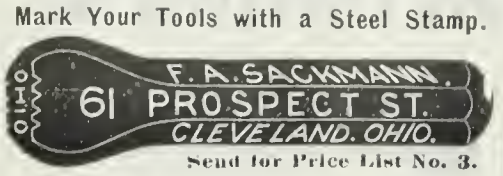

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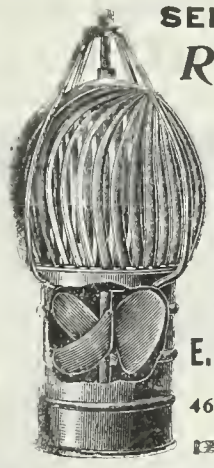

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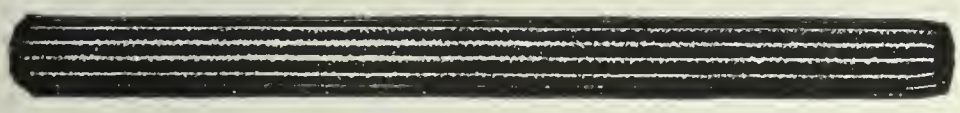

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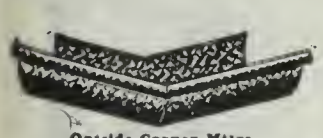

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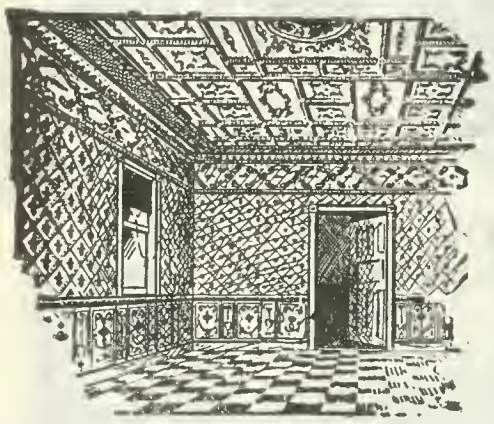

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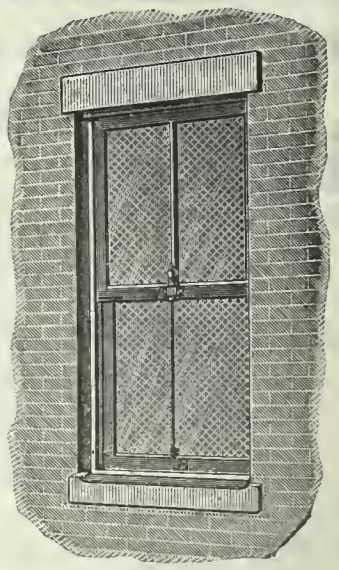

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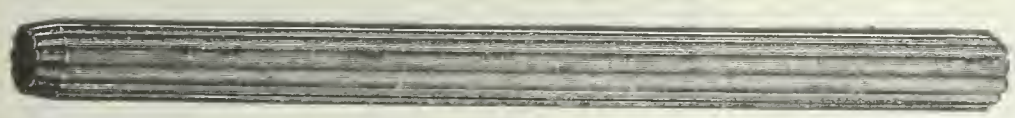

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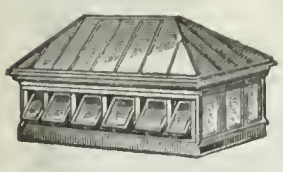

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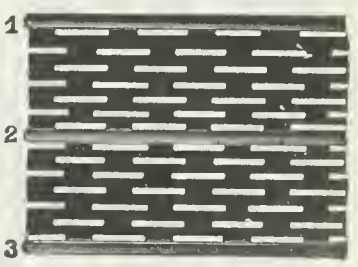

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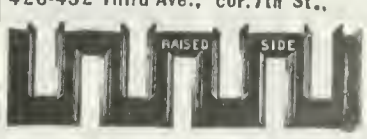

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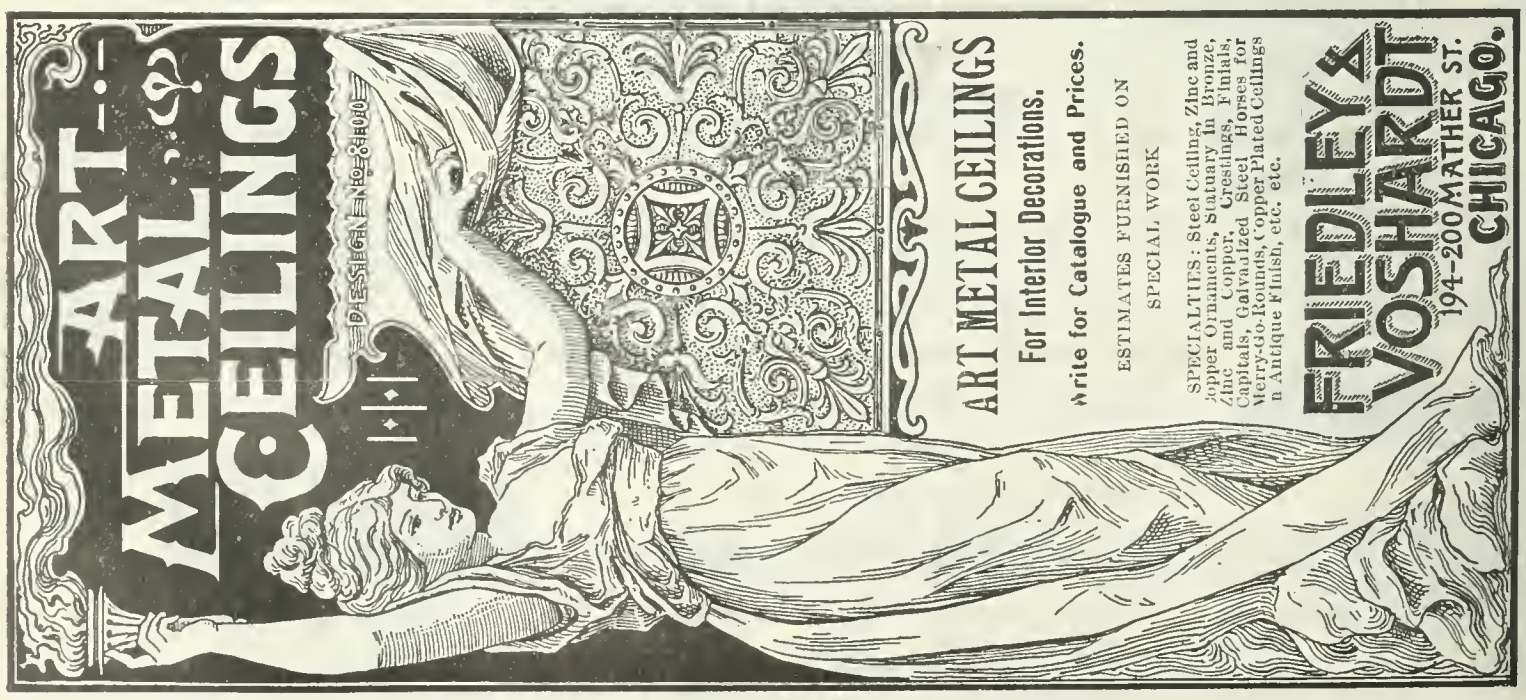
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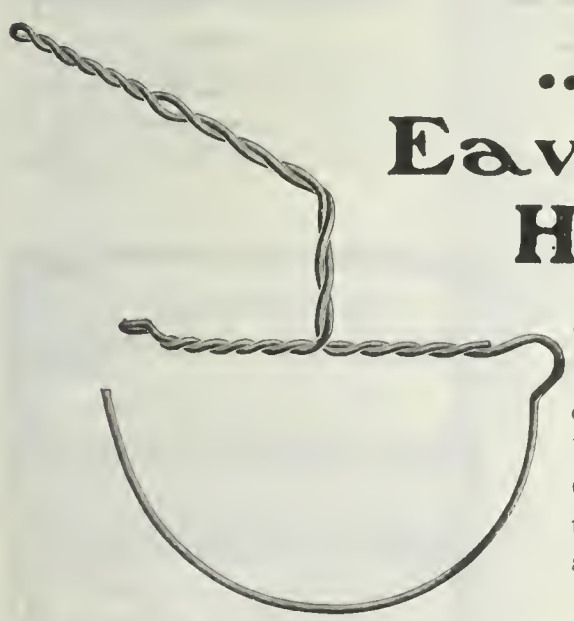

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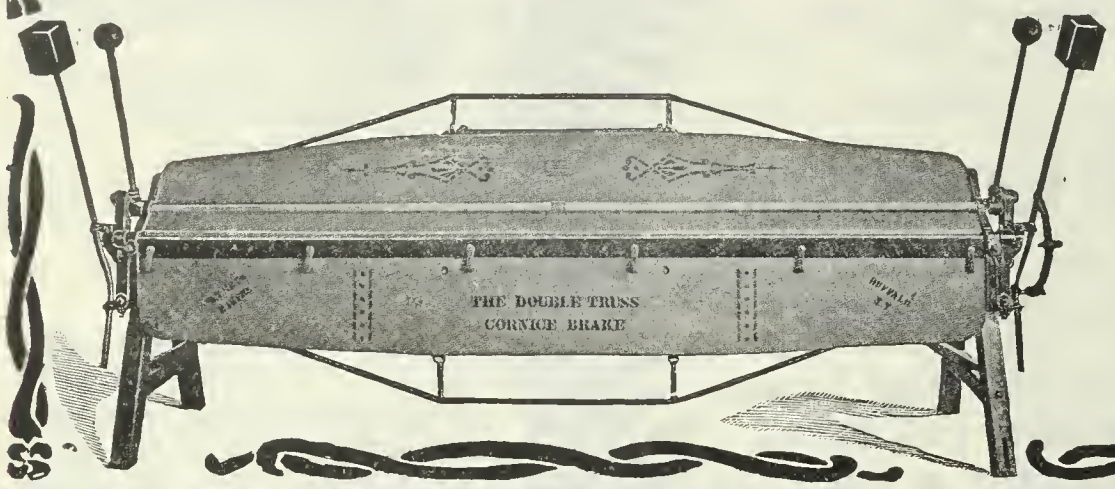

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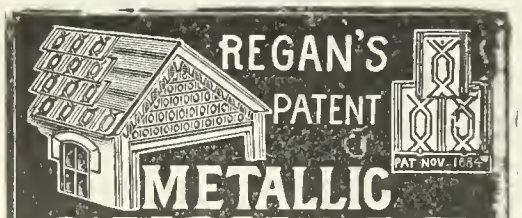

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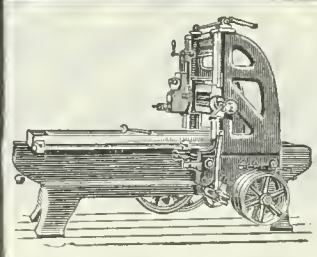

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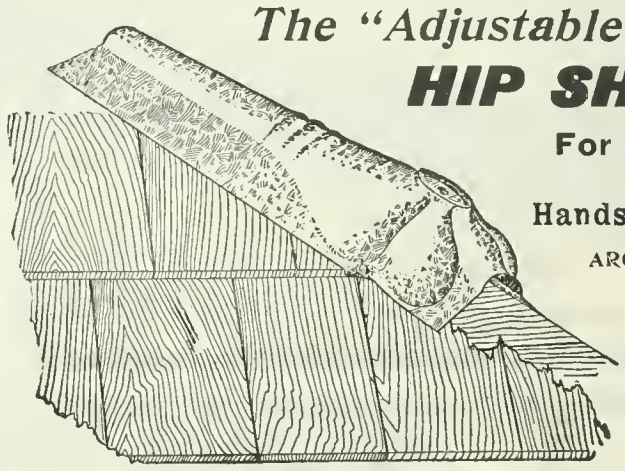

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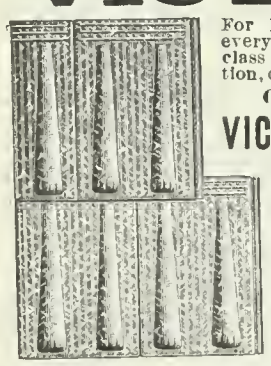

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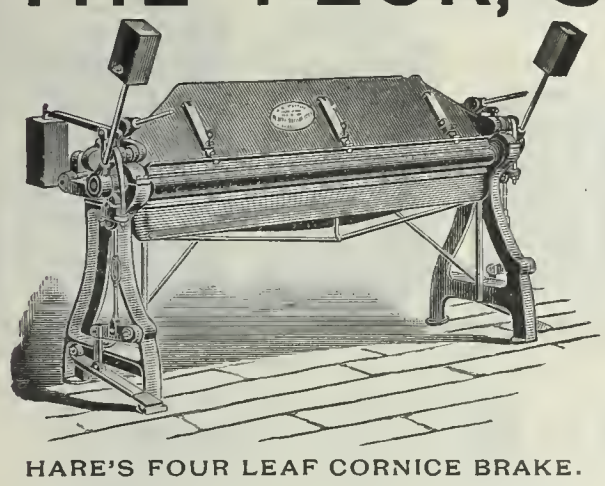

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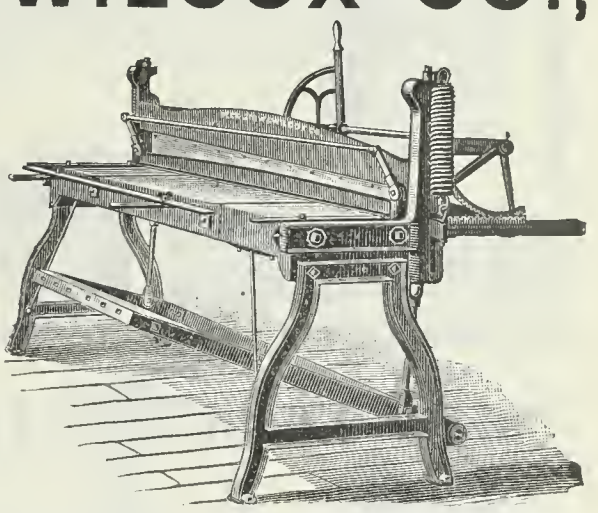

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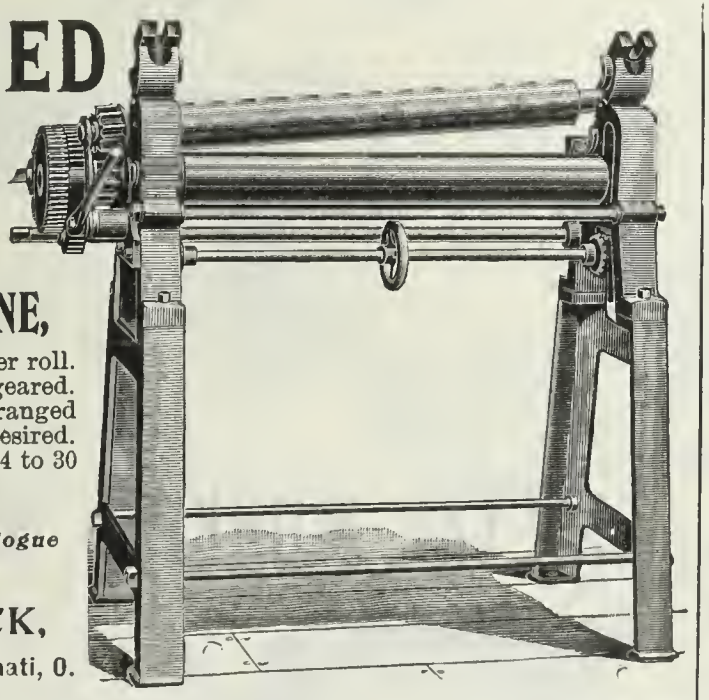

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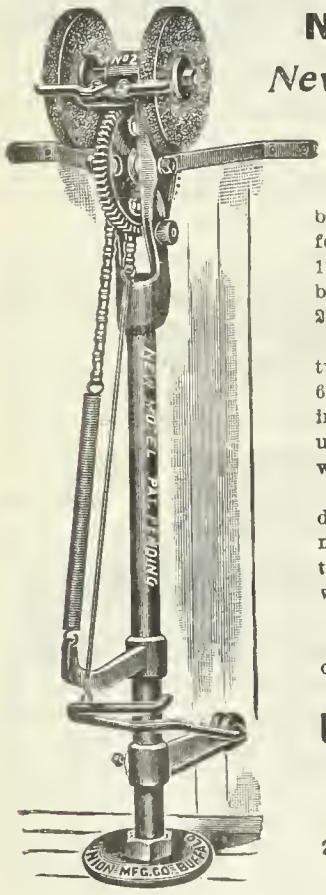

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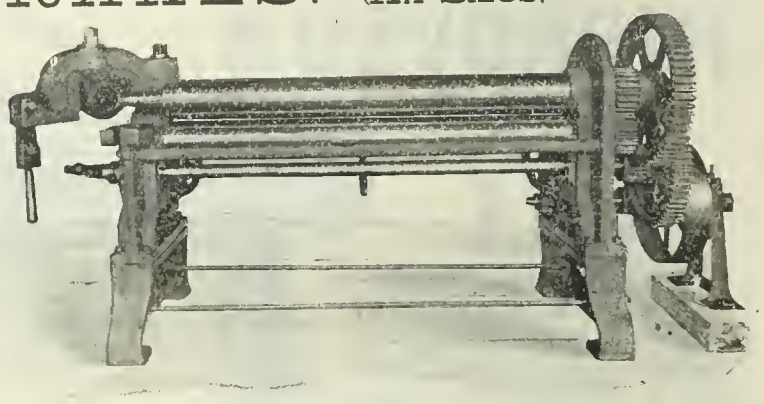

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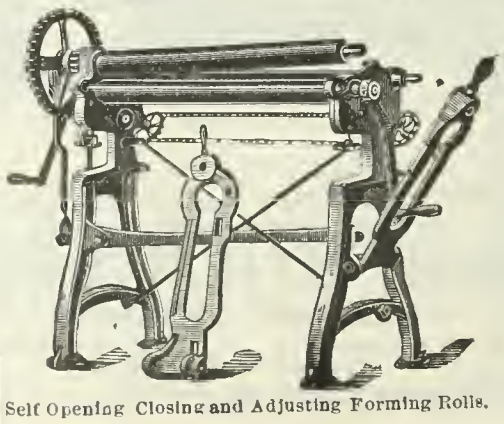

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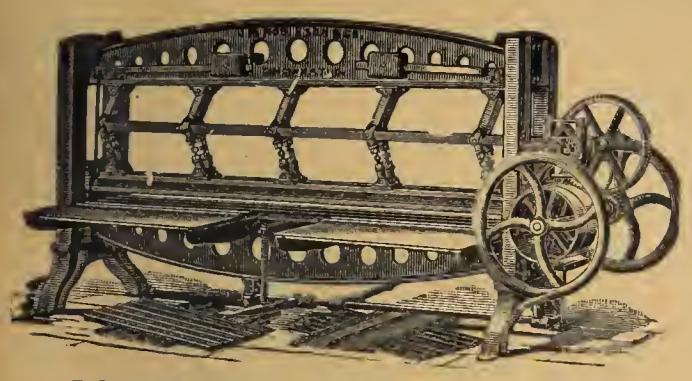

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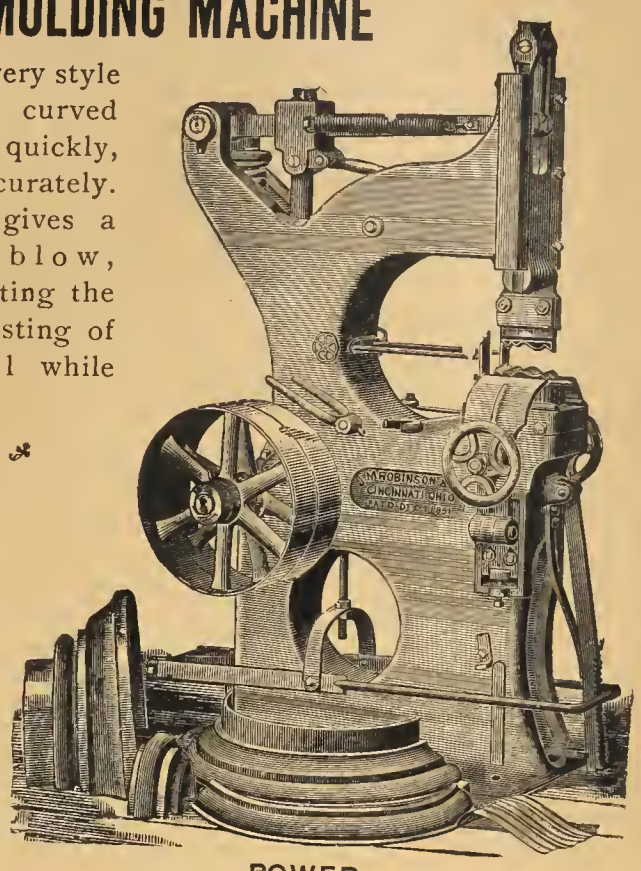

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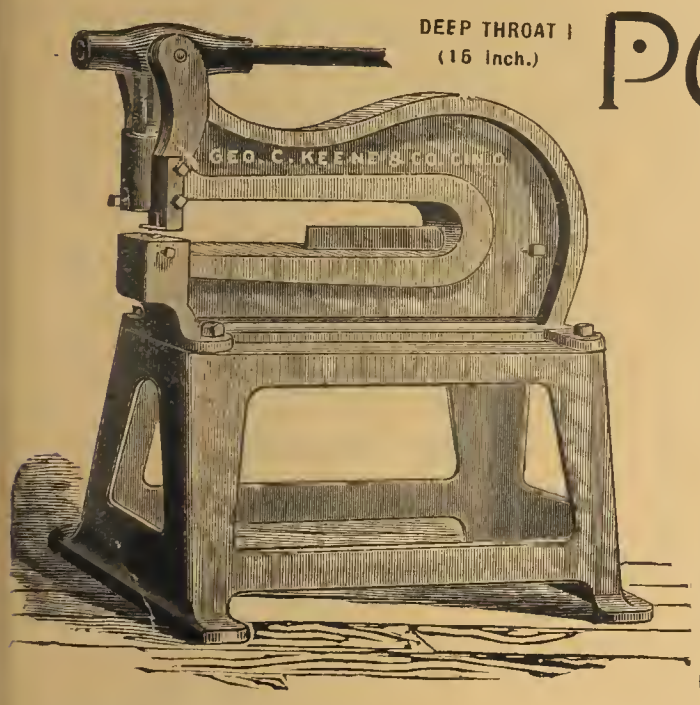

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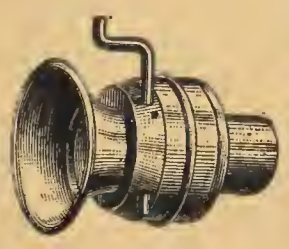

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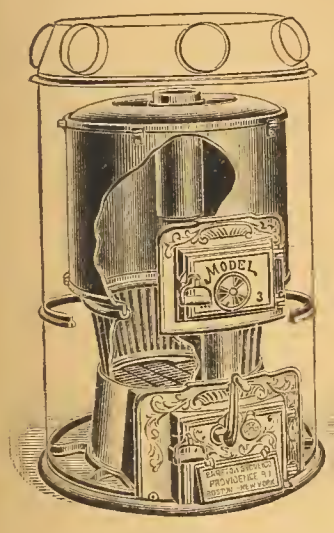

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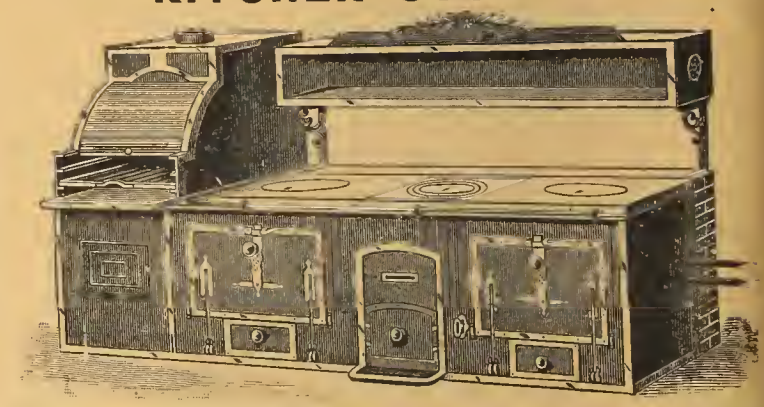

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BLACK AND GALVANIZED
SHEET IRON.

N. & G. TAYLOR CO.,

Established 1810,

Manufacturers,

PHILADELPHIA.

Don't Sell Cheap

goods, just because they are cheap. One thousand dollars in Glenwood sales brings more future business, more clean profits, more real satisfaction than five times the amount done in shoddy. Sell

GLENWOODS.

Weir Stove Company,
Foundry at Taunton, Mass.

☆

W. S. Ray Mfg. Co., San Francisco, Cal.
Jacob Retterer, Chicago, Ill.

INCREASING DEMAND
TELLS THE STORY . . .

McCLURE'S GENUINE CHARCOAL IRON REDIPPED ROOFING TIN

McCLURE & CO.

Manufacturers of Tin Plate,

PITTSBURGH, PA.
211, 213 and 215 Second Ave.

PHILADELPHIA, PA.
115 North 7th Street.

Index to Reading Matter, Page 66.

Index to Advertisements, Pages 68 - 70.

The Metal Worker

A WEEKLY JOURNAL OF THE ROOFING, CORNICE, STOVE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

VOL. LVI. NUMBER 8. NEW YORK AND CHICAGO, AUGUST 24 1901. ONE DOLLAR A YEAR. SINGLE COPIES 5 CENTS.

WILLIAM M. NEWTON,
Albany, N. Y.
Fire Brick Stove Linings
HIGH GRADE. LOW PRICE.
Also **Plastic Iron Stone Stove Lining**
In Bags or Barrels. Send for Prices.

The Gorton Side Feed Boilers
FOR STEAM AND HOT WATER HEATING.
INVESTIGATE FOR YOURSELF.
Send for Catalogue and Prices.
GORTON & LIDGERWOOD CO.,
96 Liberty St., NEW YORK. Old Colony Bldg., CHICAGO.
77 Oliver St., BOSTON. Prudential Bldg., ATLANTA, GA.

STOVE LININGS
McLEOD & HENRY CO.,
TROY, N. Y.

Diamond Thimbles. S. CHENEY & SON, Manlius, N. Y.

Don't get the idea, because we talk Paragon Furnaces so much, that we don't make other furnaces. Our line of high-grade, medium and low-priced furnaces is the most complete line of heating goods in the United States. Besides the famous Paragon line we make Paragon Junior Furnaces in five sizes and four styles, and Excelsior Furnaces in two styles and five sizes. We are prepared to supply any demands, and at the right price.

ISAAC A. SHEPPARD & CO.
NEW YORK PHILADELPHIA BALTIMORE

OLLO BEST BLOOM
ALVANIZED IRON.

he worse your gal-
ized iron, the longer
kes you to work it.
oss in wages; no
.

merican Sheet Steel Company
Battery Park Building
New York

If you have a line of
P. P. STEWART
Goods on your sample floor, your fall trade is assured.
Quick sellers bring big profits.
FULLER & WARREN CO., Troy, N. Y.

THE DIGHTON FURNACE Page 22.

FOLLANSBEE BROTHERS CO.,
328-330-332 Second Ave.,
Galvanized and Black Sheets.

Roofing Tin Plates:
the best imported,
Follansbee Bros. Co.'s
Pure Iron Old Style;
the best American,
Scott's Extra Coated.

Philadelphia Branch,
133 Arch Street,
S. V. Reeves, Manager.

CROSBY SPRING-SEAT
GLOBE and ANGLE VALVES, IRON and BRASS.
All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.
Crosby Steam Gage & Valve Co.,
BOSTON: 95 Oliver St. NEW YORK: 73 John St. CHICAGO: 21 23 W. Lake St.

am Specialties.
F and NOISELESS BACK
ATOR VALVES, PRESSURE VALVES,
I TRAPS, PUMP GOVERNORS,
AND WATER STEAM and OIL SEP-
CING VALVES, ARATORS.
TEMPERATURE CONTROLLER and
No. 1 DAMPER REGULATORS
KIELEY AND MUELLER.
W. 13th St., - NEW YORK.

JENKINS IMPROVED AUTOMATIC AIR VALVES.

Suitable for high or low pressure. Take no more room than an ordinary air cock. Endorsed by the leading steam experts as the best made and the quickest working. All genuine stamped with our Trade Mark.
JENKINS BROS., New York, Boston, Chicago, Philadelphia.

ROUND OAK— STANDARD of AMERICA

CURTIS GANDY CHI. 1900

A collection of
iron plates and
castings is

**No more a
furnace than
a pile of
bricks and
stone**

is a house.
A good furnace
is not an accident.
The *Round Oak*
furnace is
the result of years
of careful study.
You ought to
know it thoroughly
if you appreciate
a good furnace
that will build up
enduring business.

Estate of
P. D. Beckwith, Dowagiac, Mich.

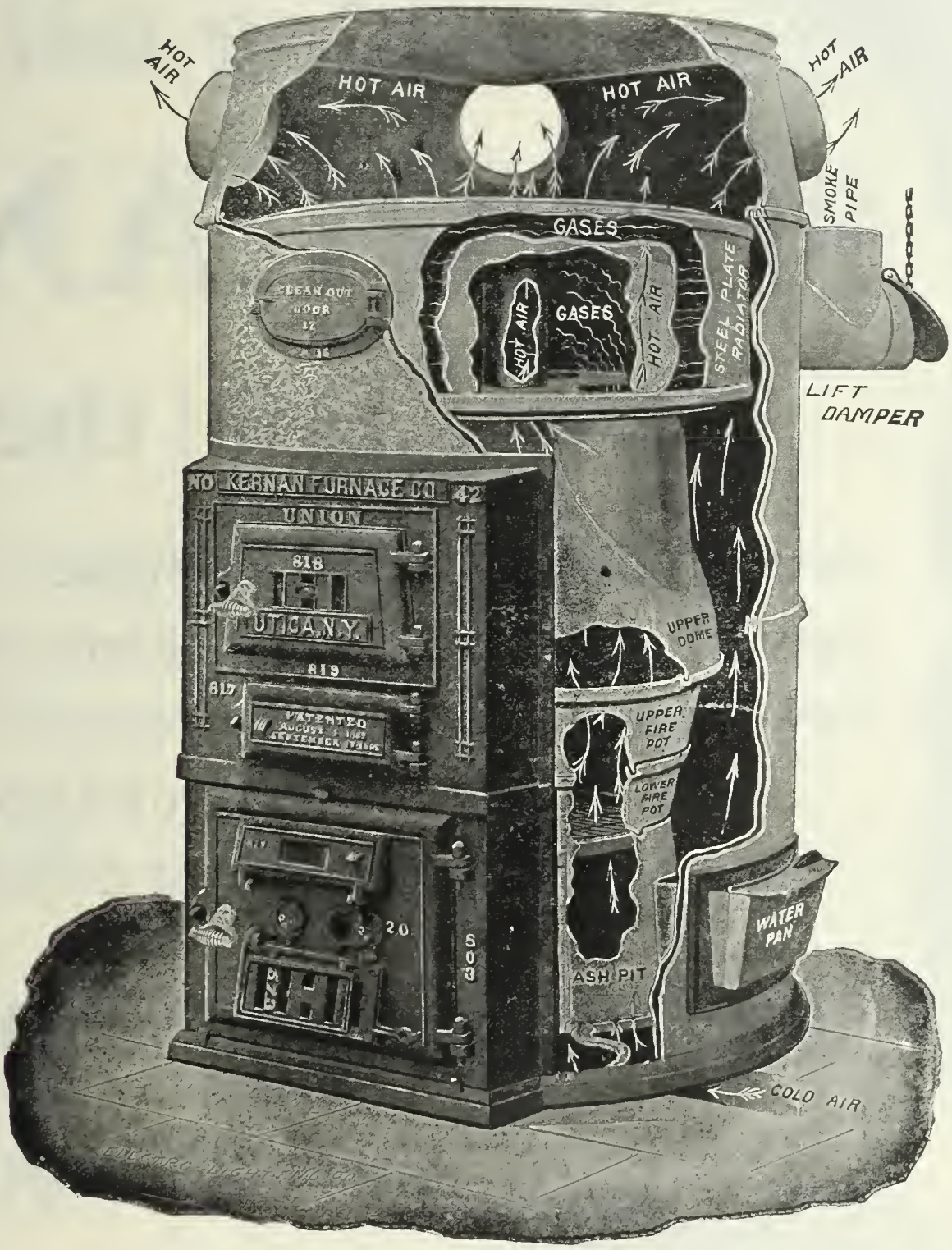
34 MAKERS OF GOOD GOODS ONLY.

HB CHICAGO

THE

Kernan Union

ABOUNDS IN "TALKING POINTS."



Why Don't YOU Handle It?

International Heater Co.,

UTICA, N. Y.

BOSTON, NEW YORK, CHICAGO, DENVER.

Largest Makers of Heaters in the World.

GAR ST RA

"The W

Nothing too

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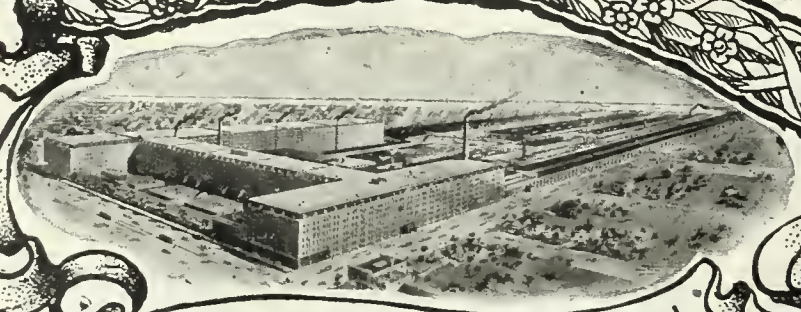
For the Sea

New Models of Steel Ranges.
New Models of Steel Cooking Stoves.
New Models of Base Burners.
New Models of Sheet Iron
New Models of Sheet Iron H

More New and Desirable Patterns

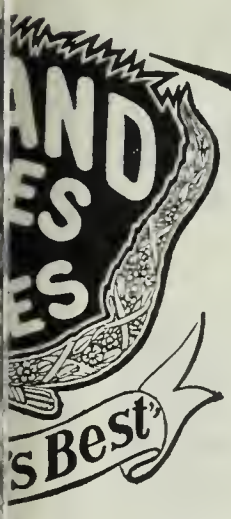
Our New Catalogue is y



The Michigan S

Largest makers of Stoves

DETROIT. CHI



Good for AGENCIES

son of 1901.

New Models of Cast Ranges.
New Models of Cast Cooking Stoves.
New Models of Oak Stoves.
aters for Coal (Hot Blasts).
ters for Wood (Air Tights).

an Have Ever Before Been Offered.

rs for the asking

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ove Company,

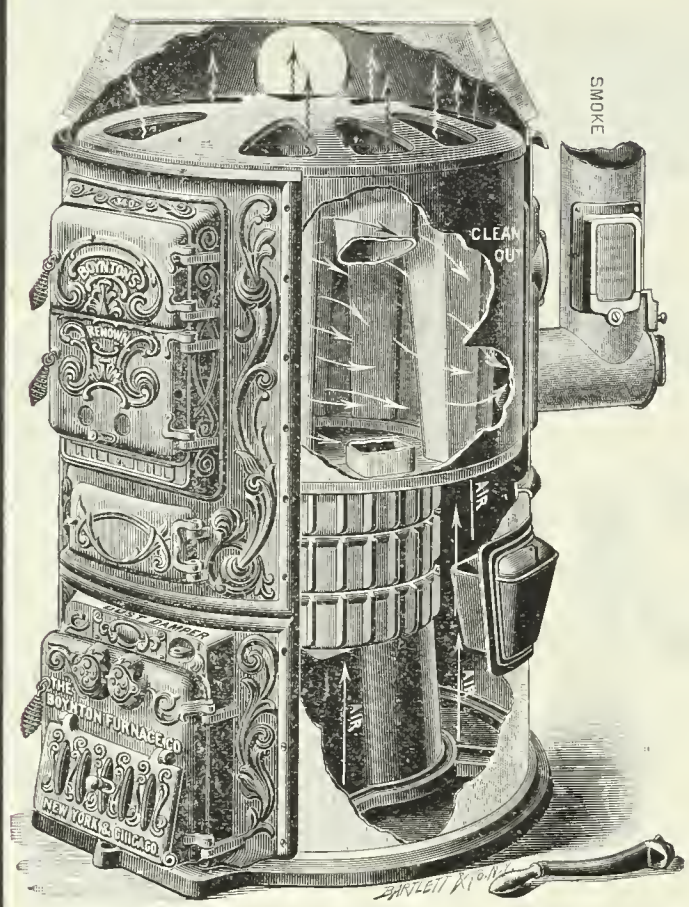
d Ranges in the World.

D. BUFFALO.

WESTERN HEADQUARTERS. CHICAGO.

BOYNTON'S "RENOWN"

PORTABLE FURNACE



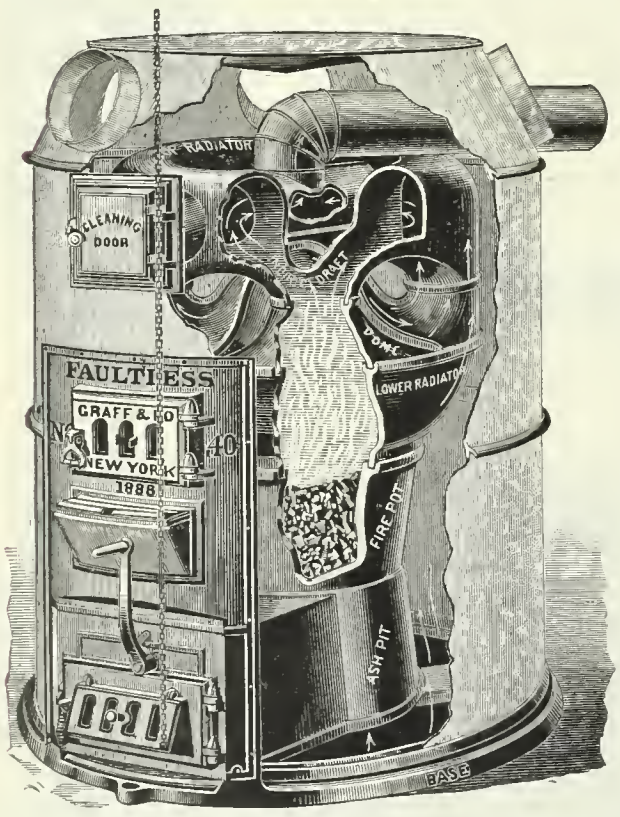
A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**

NEW YORK, CHICAGO.

FAULTLESS FOLKS ARE FEW



But our FAULTLESS Furnaces and Ranges are Many.

There are THOUSANDS of them in use, and are KNOWN EVERYWHERE as STRICTLY FIRST-CLASS.

They are NOT CHEAP, but GOOD! There may be others as good, but there can be NONE BETTER.

We make other grades also; suited to all requirements. Shall be pleased to have you investigate by getting our Catalogue and Prices.

THE GRAFF FURNACE CO.,

208 WATER STREET, - - - - NEW YORK.

QUICK MEAL

ENAMELED STEEL RANGE

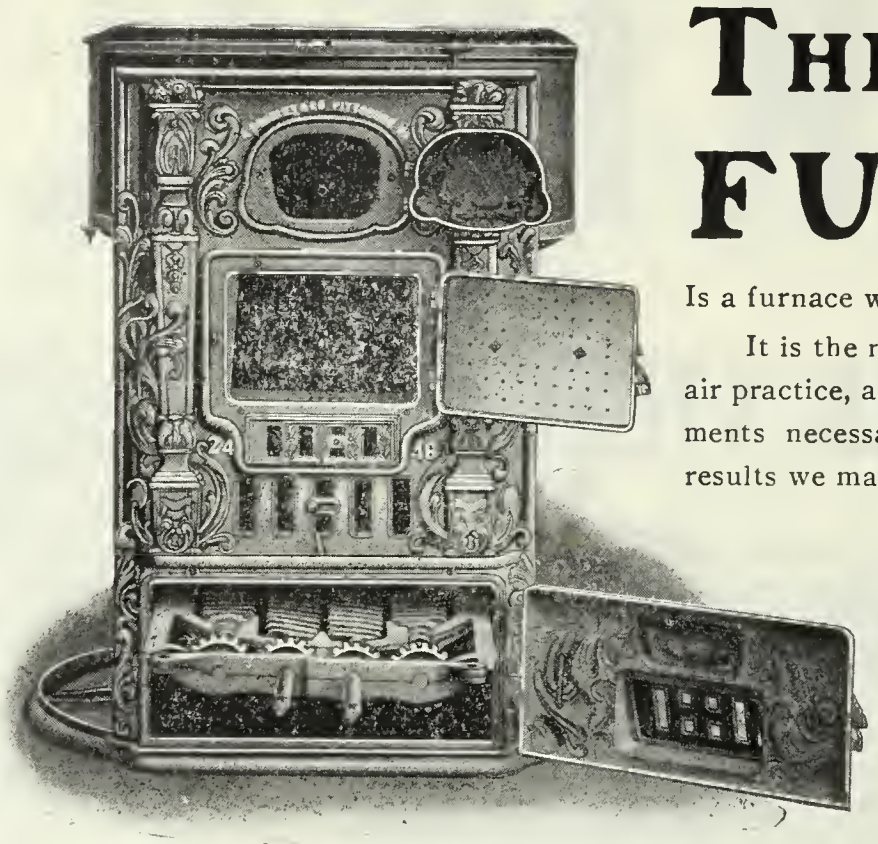
A well assorted line of **"Quick Meal" Steel Ranges** on the dealer's floor will add tone to the appearance of his store, attract the eyes of his customers, and make it easy for him to sell.

The special features, such as the Heavy Triple Walls, the Fine Enameled Finish, and the Simplicity of the Reservoirs, places the **"Quick Meal"** dealer in a position where he can show why he has the best range.

"Quick Meal" Left Hand Reservoirs are a Pronounced Success.

The **Right Hand "Quick Meal" Reservoirs** are made on the same principle.

RINGEN STOVE Co. SAINT LOUIS



THE ETNA FURNACE

Is a furnace worth talking about and selling.

It is the result of twenty years' experience in hot air practice, and knowing the wants and the requirements necessary to produce successful, satisfying results we made the Etna accordingly.

The Etna contains many strong, practical features not found in the majority of others. We feel satisfied they will meet the approval of every dealer who has been up against the heating problem and encountered its difficulties. We have smoothed out some of the rough places.

READ THE CATALOGUE. SENT FOR THE ASKING.

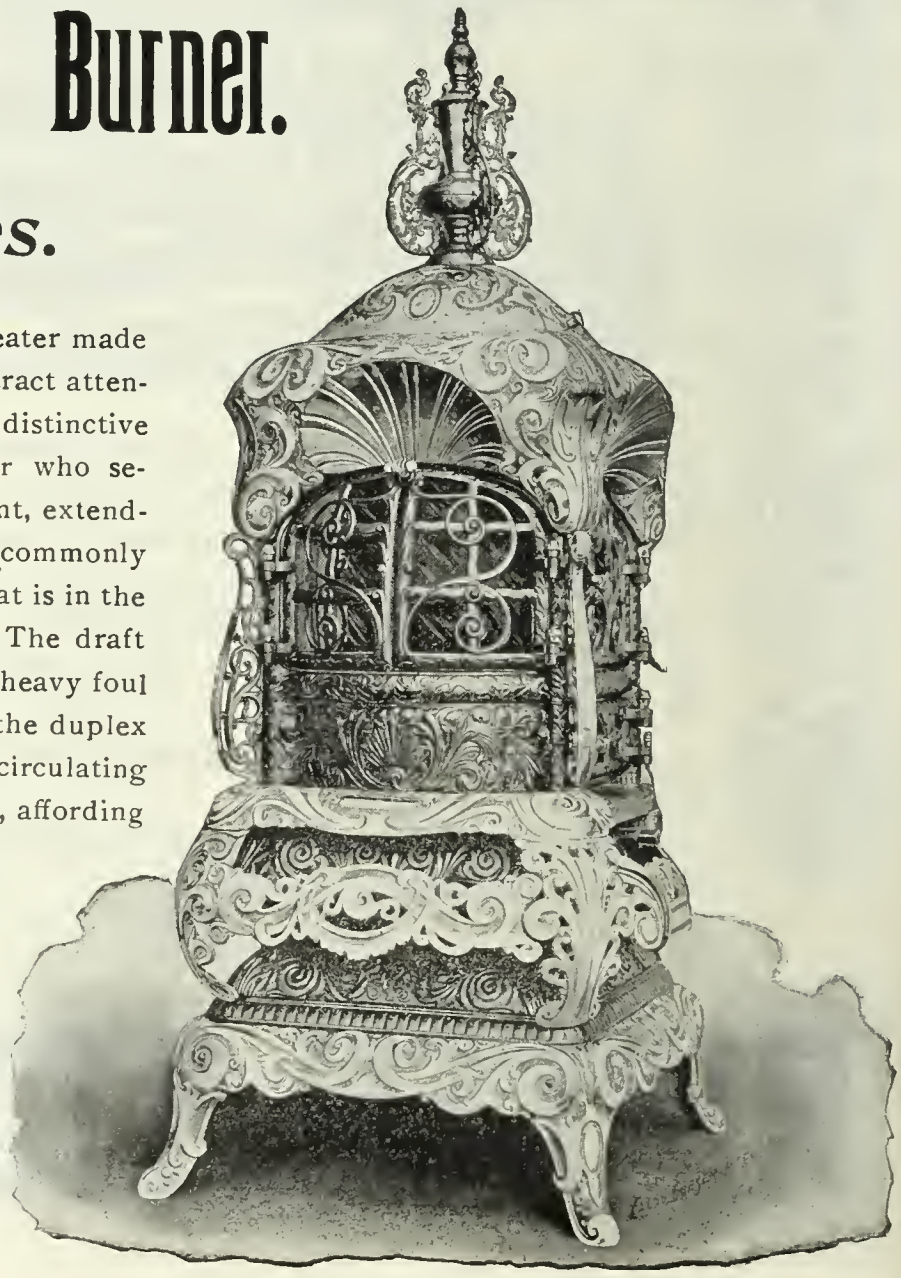
Pittsburgh Stove & Range Company

PITTSBURGH, U. S. A.

The Monitor Base Burner.

High Art Series.

It is without doubt the most powerful heater made and its rich and graceful appearance will attract attention at once. The novel construction and distinctive features offer every advantage to the dealer who secures the agency. The diving flue is in front, extending entire width of stove, being what is commonly known as a sheet flue, thus the greatest heat is in the front of the stove where it is most needed. The draft is taken in through the bottom, carrying the heavy foul air which settles near the floor. Grate is of the duplex pattern with outer shaking ring. Two large circulating flues are fitted in rear corners of the stove, affording ample circulation for heating evenly the largest room. Send for new Catalog and secure the agency without delay.



The Wm. Resor & Co.,

CINCINNATI, U. S. A.

CRAWFORD OAK

This Oak has a deeper firepot than most others, and keeps fire longer. It has a roomy ashpit and a real ash-pan. The ashpan is four and a half inches deep.

Every part of this Oak is well made and fully warranted. The best nickel-plating that can be bought for money.

Cold air check register, mica panels and showy ebonized brass trimmed urn. The base nickeled if desired.

Triangular or draw-center grates; disc grates for wood. Firepots single or double. Pipe collars top or back.

This Oak is made in three diameters, 13, 15, 18 inch body; the 18 inch is also made extra high; four sizes in all.

Our prices may interest you, and if you will write, we will send complete circular and make a bid for your business.

Walker & Pratt Mfg. Co.

Finest Stove Foundry in the World

31-35 Union Street, - Boston, Mass.

For Beauty, Simplicity, Convenience and Heating Power,

The Improved....

"NEW PROCESS"

AND

"IMPROVED" Standard OIL HEATERS

Excel all others.

You must order early if you expect to get heaters this year. Our jobbers have them.

BOOKLETS READY.

THE STANDARD LIGHTING CO., Cleveland, Ohio.

CATALOGUES SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

DEALERS, BUILDERS AND OWNERS

COLUMBIAN LINES.

Should secure our Line of Goods. They will then have the Best on the Market.

The Columbian Banner, Comet, Prince and Climax Furnaces, and the Columbian Peerless, Victor, Newport, Star and Triumph Ranges are all substantial, efficient and economical.

ALL KINDS OF WOOD AND COAL

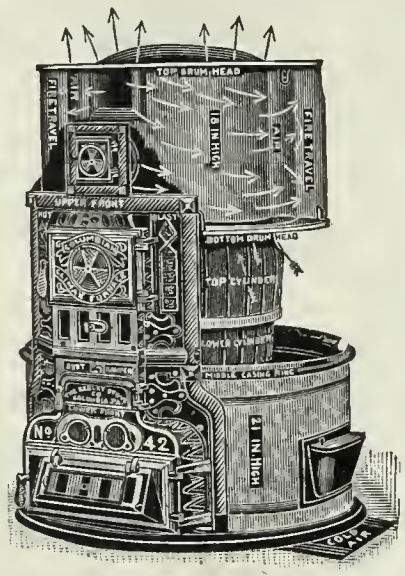
Airtights, Base Burners, Globe and Cylinder Stoves, Gasolene and Oil Stoves.

Write us for full information and catalogues..

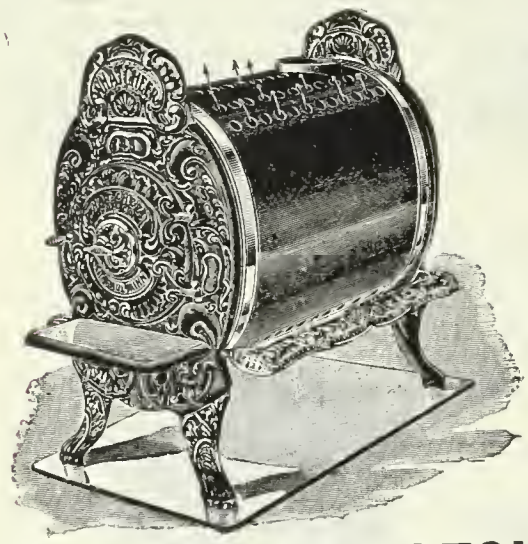
THE KEELEY STOVE CO.,

COLUMBIA, PA.

Chicago Branch: JACOB RETTERER, 167 and 169 Lake St., Chicago, Ill.



COLUMBIAN LINES.



What Cheer Circulating Heaters

Do more heating with less expense for fuel,
Heat a room quicker with less trouble,
Heat more evenly with less cold corners than any other wood stove, and warms the floor better than any base heater.
It is the most perfect ***Hot Air Circulating*** wood stove made.

Our new No. 349 has proven as satisfactory and popular for churches and other large rooms as our celebrated parlor lines. It is in especial demand for school rooms, because it heats the entire room evenly. It takes 34 inch wood and has very heavy cast linings.

WHAT CHEER STOVE CO., 924 Raymond, St. Paul, Minn.

JEWEL STOVES AND RANGES..

JEWEL STOVES AND RANGES
DETROIT STOVE WORKS
LARGEST STOVE PLANT IN THE WORLD

A Complete, Well Advertised Line; Low Prices and Good Workmanship.

Please Write for Catalogue.

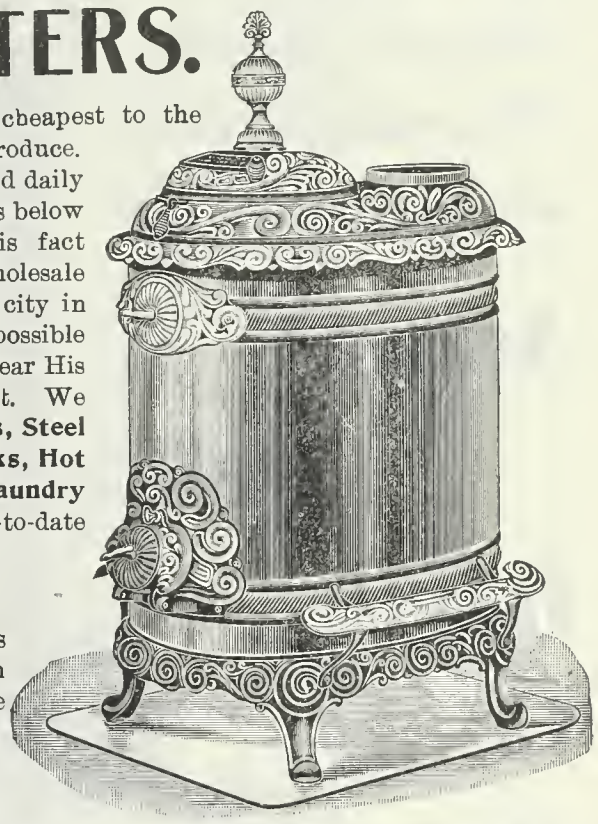
DETROIT STOVE WORKS.

Detroit - Chicago.

AIR TIGHT HEATERS.

Our line in these comprises everything from the cheapest to the very finest finish possible to produce. Our manufacturing facilities and daily output justify us naming prices below any possible competition. This fact has enabled us to establish Wholesale Agencies in nearly every large city in the United States and makes it possible for us to supply the Dealer "Near His Door," saving time and freight. We also manufacture **Steel Ranges, Steel Cooks, Cast Ranges and Cooks, Hot Blast Coal Heaters, Oaks, Laundry Stoves, Radiators, etc.,** all up-to-date goods.

Write us for particulars and we will put you in the way of making some money.



EXCELSIOR STOVE & MFG. CO., - Quincy, Ills.

STOP!

If you're looking for a Steel Range combining all the qualities which go to make an article of that kind desirable—

High Grade Materials and Workmanship,
Correct Construction, Operation Guaranteed,
Modern Design, Latest Improvements,
Low Price—you have it in the

Triumph Eclipse, New "D" Series.

THE BEST LINE OF LOW PRICED RANGES ON THE MARKET.

The Eclipse Stove Co., Mansfield, Ohio.

Repositories at St. Anthony Park, Minn.; Omaha, Neb.; Denver, Col.

Gurney

HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES *and* STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

GURNEY AND COMPANY
WASHINGTON, HANOVER AND ELM STREETS
BOSTON, - MASSACHUSETTS

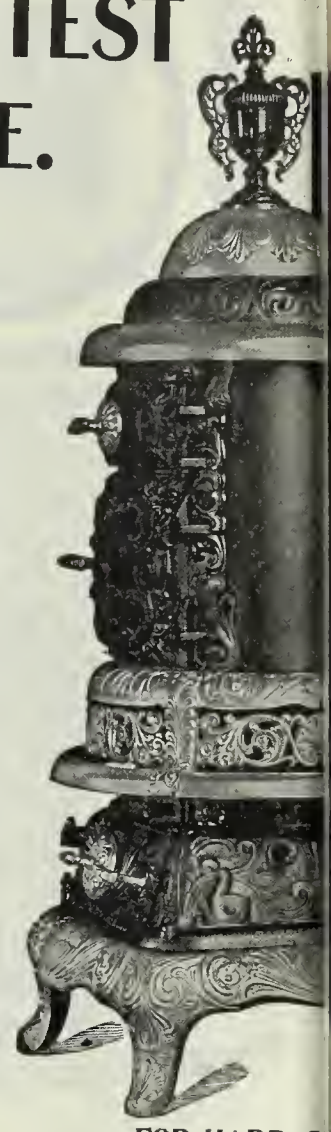
1901 ACORN OAK STOVE

HIGHEST GRADE. TIGHTEST MADE.

Write for our Oak Stove Book Number Five showing

Acorn
Oak,
Hard Coal Oak,
Glen Oak,
Charm Oak:

WITH AIRLESS BASE, FULL NICKEL FINISH.
Sizes, 14 to 20 Inch.



FOR HARD C
With Illuminated Fr
Attac

Fo
Se
of
Th

RATHBONE, SA

THE OLDEST AMER

Eastern Foundries. ALBANY, N. Y.

"HERE IS THE SIGN"

That should hang in front of YOUR store. The electrotype of the man and the maiden is one of the 1901 Acorn Advertisements ready to use, which would be furnished free of charge for use in your local paper.

SMOKE PIPE

WOOD,
Double Heater

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t Sell!

D & COMPANY,

N STOVE MAKERS.

Western Foundries, AURORA, ILLS.

BEAVER FURNACE

NOT REMODELED BUT REDRESSED.

A furnace adapted for all kinds of fuel. It has stood the test of many winters, steadily gaining in circulation wherever sold.

The sectional fire pot, with deep cup joints, heavy castings, and patent revolving grate, with large ash pit, are features that commend the Beaver everywhere.

THE DANVILLE STOVE & MFG. CO.,

DANVILLE, PA.

AGENCIES:

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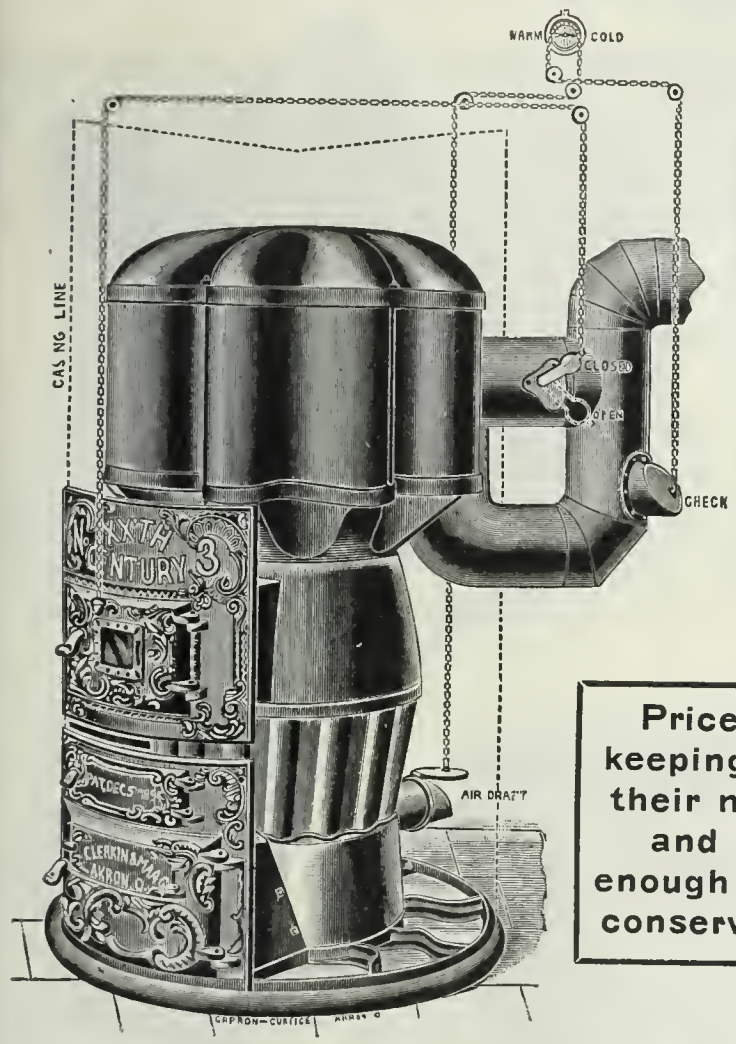
A. H. MacADAMS, No. 107 North 2nd Street, Philada., Pa.
R. E. EDMONDS, No. 203 Wood Street, Pittsburgh, Pa.
W. D. SAGER, No. 40 Michigan Street, Chicago, Ill.



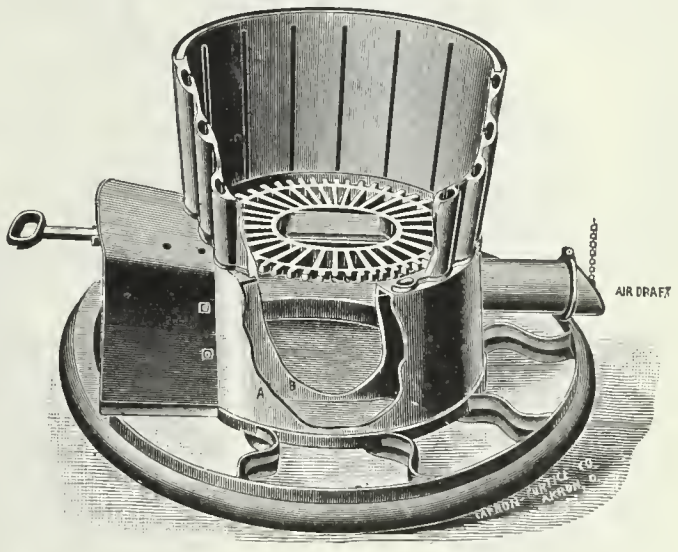
XXth CENTURY

LINE OF HEATERS.

For Soft Coal, Hard Coal, Lignite, Wood, and Natural Gas.

Anything that can be Burned.

Prices in keeping with their merits and low enough to be conservative.



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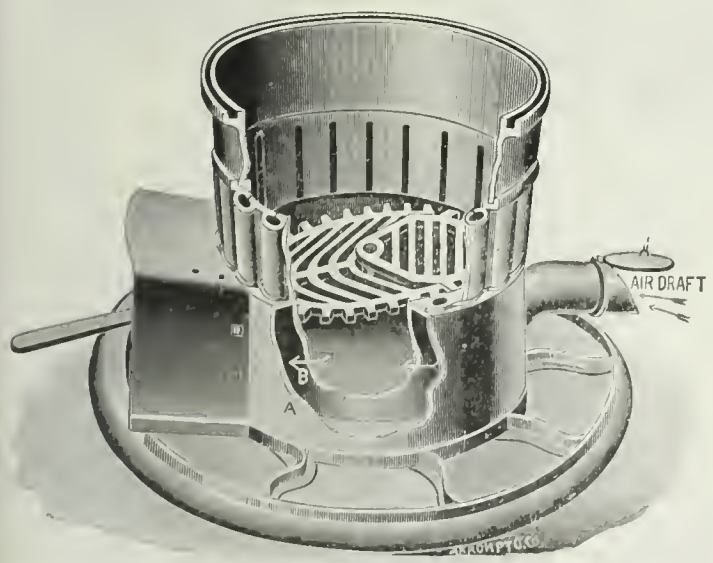
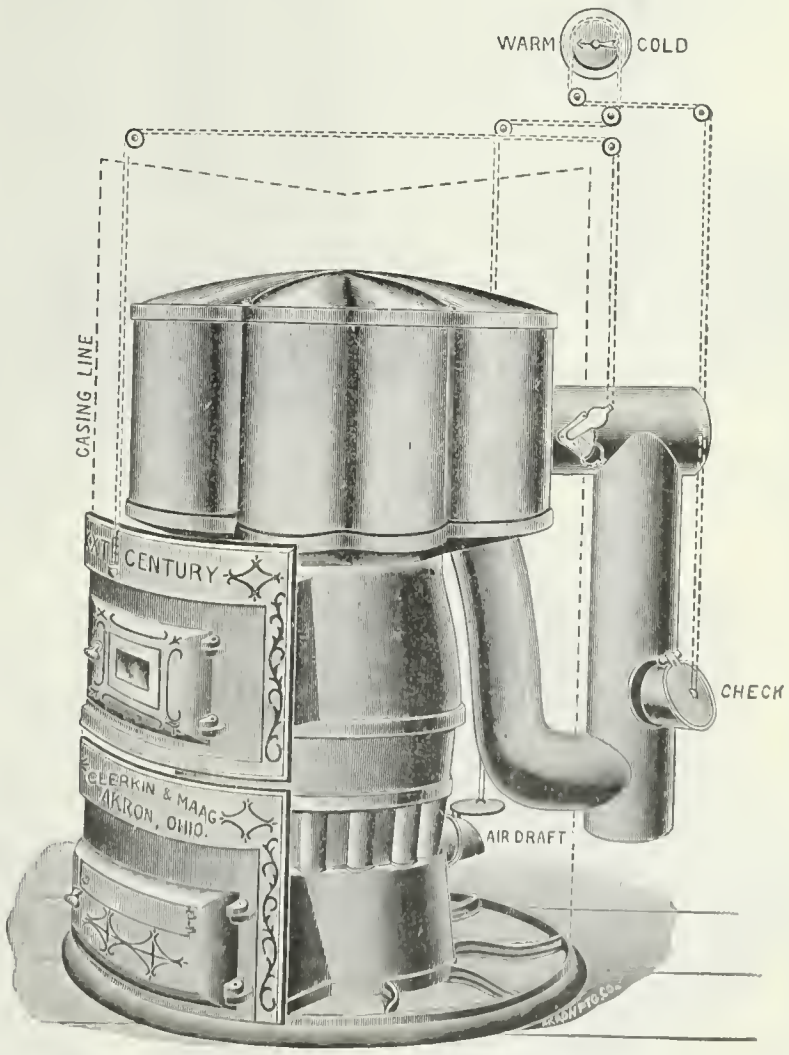
Received and Shipped Since January 1, 1901:

Galer & Swaney Mfg. Co., Kansas City, Kas.; McKinstry & Forker, Hutchinson, Kas.; Peter Nicholas & Co., Louisville, Ky.; L. P. Milward Co., Lexington, Ky; O. K. Stove and Range Co., Louisville, Ky.; Phillips & Buttorff Mfg. Co., Nashville, Tenn.; T. A. Snow & Co., Chattanooga, Tenn.: C. Ed. Smith Hdw. Co., New Castle, Pa.; W. L. Rice & Co., Canal Dover, O.; F. O. More & Son, Bellefontaine, O. Hundreds of others are ordering from one to ten heaters. These heaters cannot be appreciated without inspection. Order a sample and we will ask you for no more. No copied constructions, everything new and original.





XXth Century Heating and Ventilating Co.,

AKRON, OHIO, U. S. A.

The Furnace House of Akron.
Successors to Clerkin & Maag.

MR. DEALER:

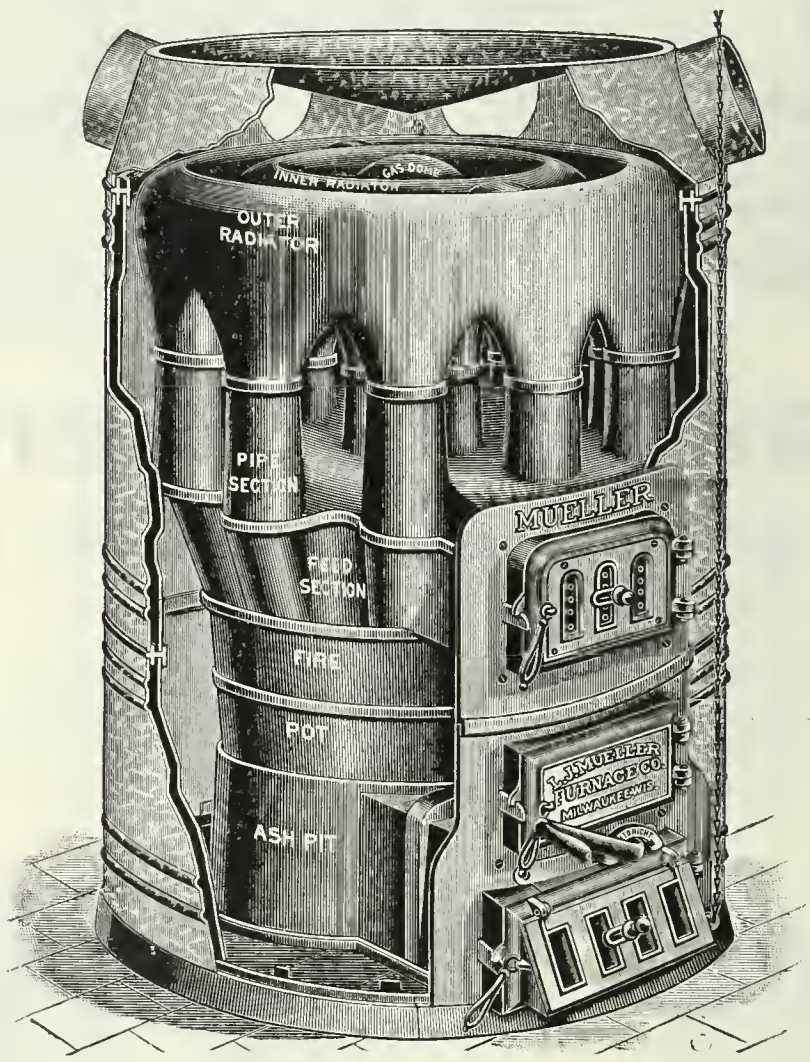
DOES NOT THIS FURNACE APPEAL TO YOUR JUDGMENT AS BEING A POWERFUL, DURABLE AND ECONOMICAL HEATER? IF SO, WILL IT NOT APPEAL TO YOUR CUSTOMERS IN THE SAME MANNER?

WRITE TO-DAY FOR OUR CATALOGUE AND PRICES

ECONOMICAL

DURABLE

NO EXPERIMENT



NONE AS GOOD

SELF CLEANING

FAULTLESS

-MANUFACTURED BY

L. J. MUELLER FURNACE CO.

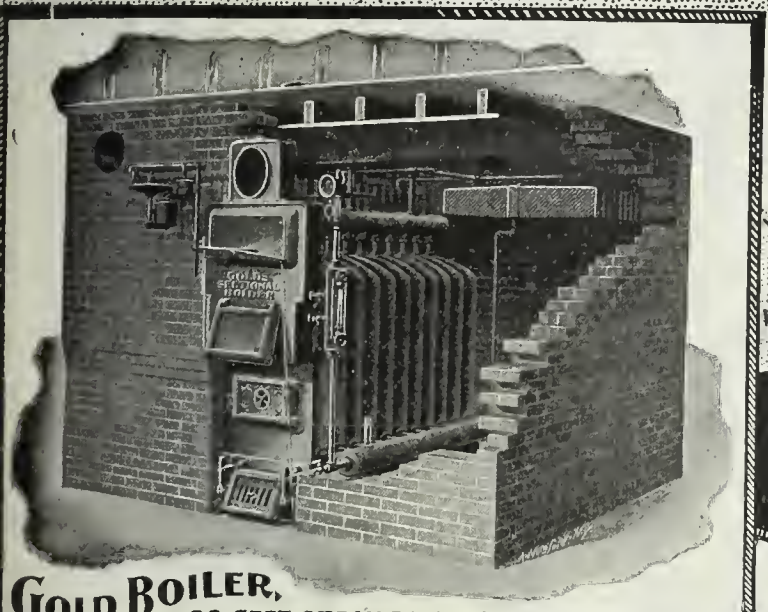
MILWAUKEE, WIS.

Established 1857 Office and Salesroom, 190 Reed St.

EVERYTHING IN THE HEATING LINE

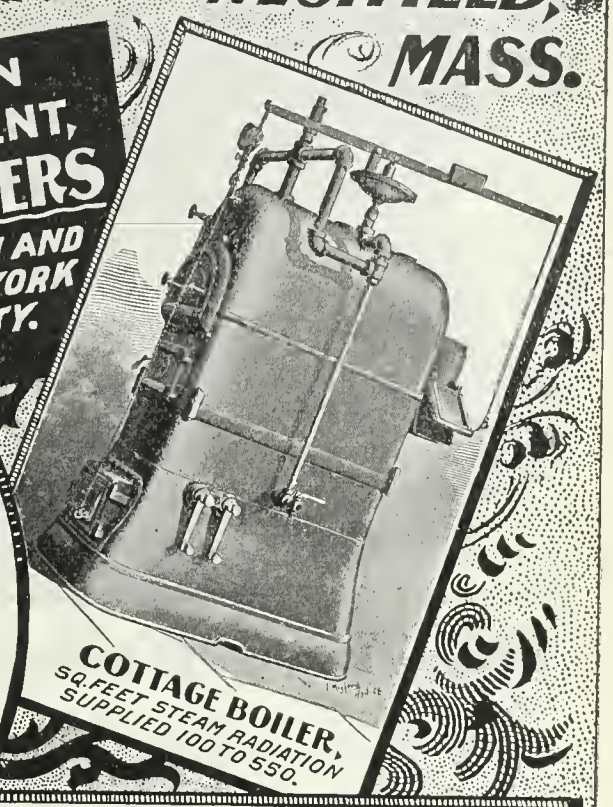
THE H.B. SMITH CO.

WESTFIELD, MASS.



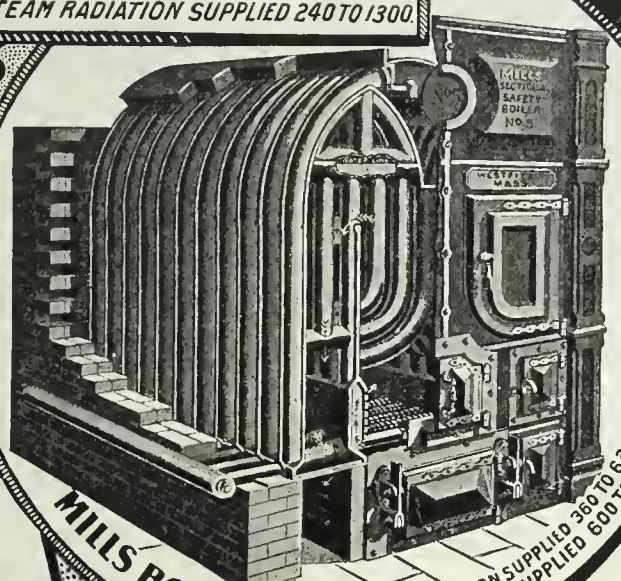
GOLD BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

EUROPEAN AGENT,
AUG. EGGERS
BREMEN AND NEW YORK CITY.

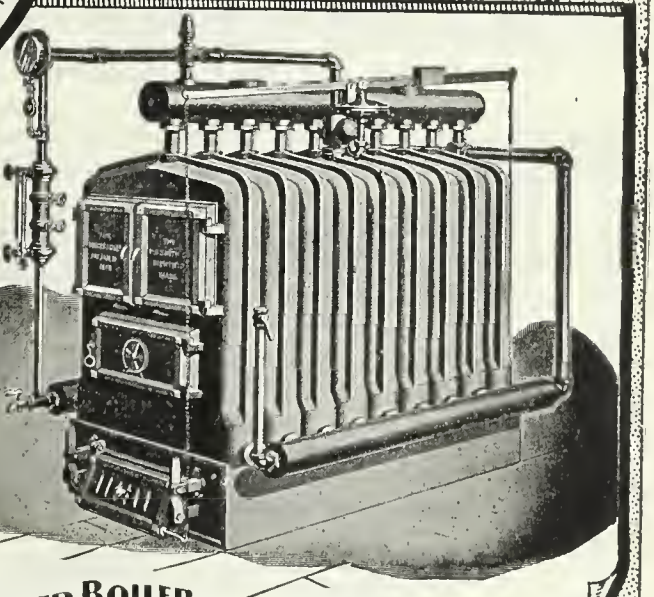


COTTAGE BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 100 TO 550.

PACIFIC COAST AGENTS,
DUGAN BROS.
SAN FRANCISCO CAL.

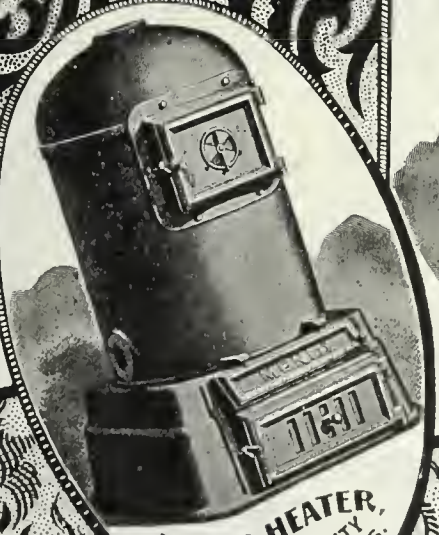


MILLS BOILER, SQ. FEET STEAM RADIATION SUPPLIED 360 TO 6250.
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.

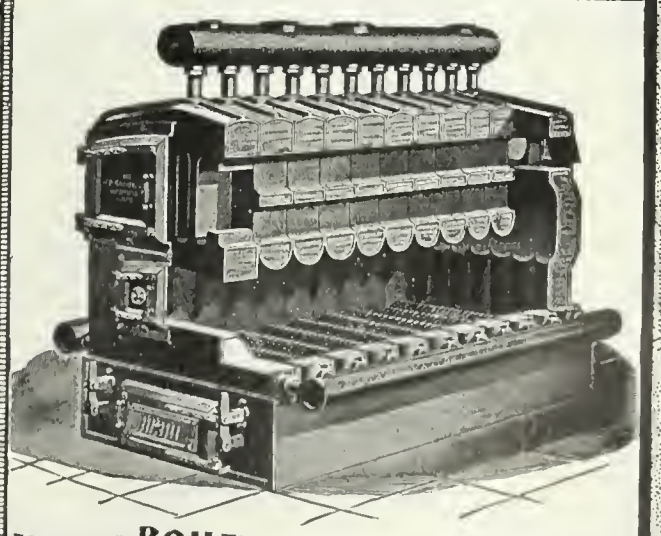
COTTAGE BOILER,
SQ. FEET WATER RADIATION SUPPLIED 150 TO 1000.



MENLO HEATER,
TANK CAPACITY
100 TO 180 GALLONS.

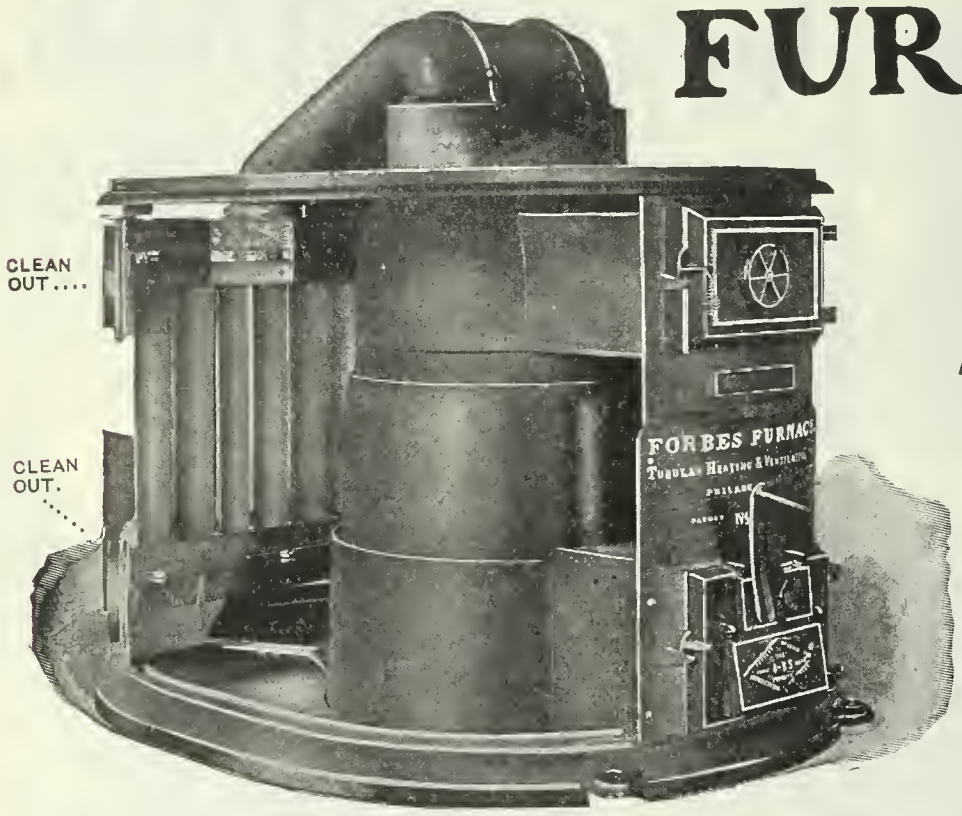
Western Agents
WESTERN BRASS M'F'G CO.
ST. LOUIS, MO.

SALESROOMS:
133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.



MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.

FORBES (IMPROVED) WARM AIR FURNACE.



ONLY 4 FEET 3 INCHES HIGH.

Compact and Simple Construction.

Aluminum Tubes

IN RADIATOR ARE RUST PROOF.

Triplex Grate.

PERFECT SHAKING. PERFECT DUMPING.

Each Bar can be separately replaced.

Forbes Furnaces Save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE AND PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

232 Quarry St., PHILADELPHIA, PA.

New Leader Furnace

POINTS OF CONSTRUCTION

ASH-PIT has great depth, with flush front. Full sized door.

Grate in full view, making the removal of ashes very easy—*not so with low ash-pit doors.*

Not a square inch of solid substance to obstruct the draft, avoiding clinker formation.

Grate is easily taken apart as there are no bolts used. The cutting off of corroded bolts takes time and costs money.

By simply removing the plate in front of the cogs the bars can be replaced by unhooking them from the yokes. This is a new and desirable feature.

Feed Dome is made in one solid casting from fire pit to radiator and offers a large surface for the direct rays of the fire.

Fire Pot is made in two sections, heavy and particularly durable.

Dust Flue is placed in front of the furnace and extends from ash-pit to feed dome. It is large and has a damper

Radiator is mounted with best quality refined steel.

5 SIZES:

20, 22, 24, 26, 28 in. fire pot.

SEND FOR PRICES.

The S. M. HOWES CO.

40-42-44-46 Union St., Boston, Mass.

Royal Heaters.

MANUFACTURED BY THE

HART & CROUSE Co.

UTICA, N.Y.

ALL THE LEADING LINES OF

STEAM, HOT WATER & HOT AIR,

FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST. N.Y.
COLUMBUS, O.

BRANCHES. 79 LAKE ST. CHICAGO,
ST. LOUIS.

Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing.

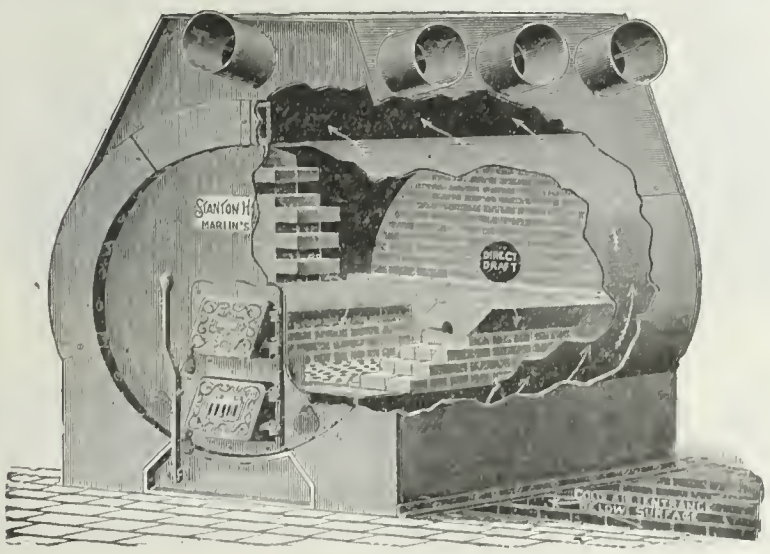
SEND FOR CATALOGUE.

Bergstrom Bros Co.

NEENAH, WIS.

The Stanton Seamless Heater,

PORTABLE CASED.



LOUISVILLE, KY., Apl. 5th, 1901.

THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

Gentlemen:—Your favor of the 3d inst. is received asking our experience with the Stanton Heater which you put in for us during the fall of 1899. In reply we will say that it gives us pleasure to express our entire satisfaction with this Furnace. While we have had no severe weather this winter there have been several quite cold snaps, but our offices have been very comfortably heated, and our coal bill (Pittsburgh coal) has been quite moderate compared with other Heaters we have used.

The satisfaction the Heater has given us can be best expressed by saying that we have not heard the Furnace mentioned once this winter. You can see, therefore, that we have had absolutely no cause for complaint.

Yours very truly
ROBINSON-HUGHES & CO.

SEND FOR CATALOGUE.

THE STANTON HEATER CO.,

Martin's Ferry, Ohio.

See our advertisement next week.

FROM THE RED CROSS LINE OF

ORNAMENTED CAST FRONT. TRIANGULAR GRATE.

THE NEW

"Ajax" Furnace.

THE MOST FURNACE FOR THE LEAST MONEY IN THE MARKET.

With Steel or All Cast Iron Radiator.

Furnished, when ordered, with

DOWN DRAFT

HOT BLAST GAS AND SMOKE CONSUMER.

Also, when ordered, we supply the popular

TWO BAR ECLIPSE REGULATOR.

Send for descriptive Catalogue.

The Bermuda

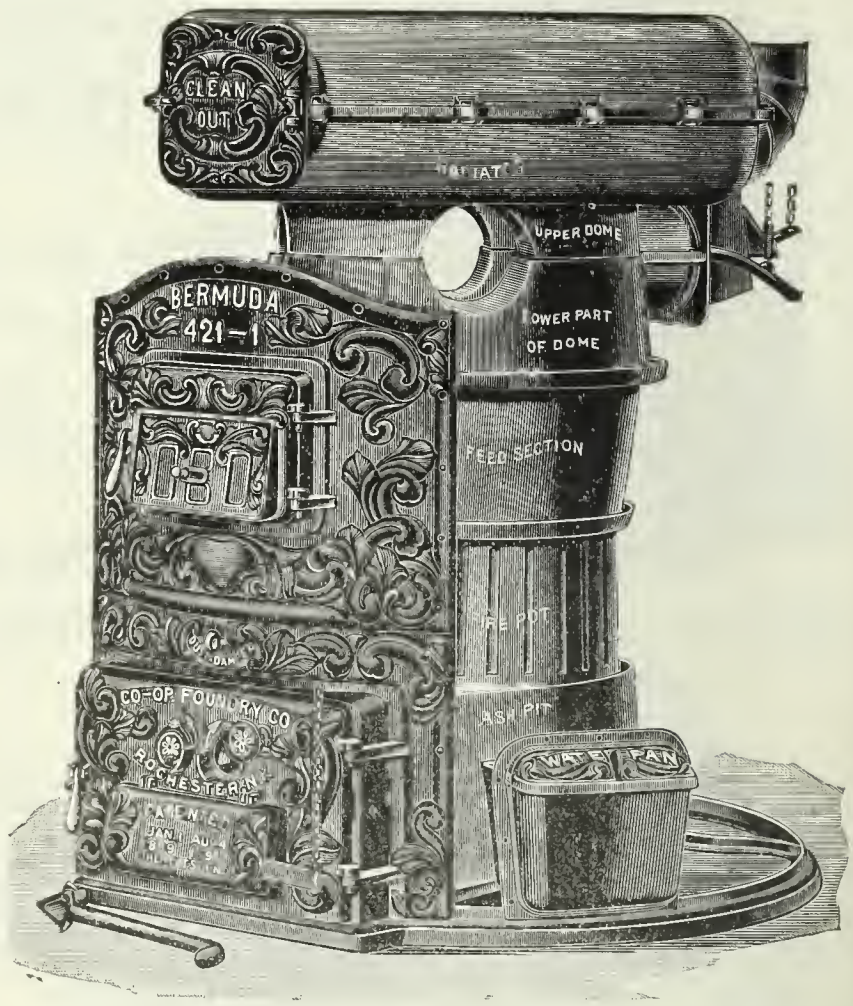
Greatest of Hot Air Furnaces.

The Embodiment of Simplicity, Efficiency and Economy.

HIGHLY ORNAMENTED CAST FRONT.

DOUBLE RADIATORS.

TRIANGULAR GRATE.



Manufactured by.... **CO-OPERATIVE**

Western Agency, J. P. LINDE

TOVES, RANGES AND FURNACES.

Red Cross Pilot Range

Brand New.

FOUR HOLES.

For Hard or Soft Coal or Wood.

Duplex or Dock Ash Grate.

The Cheapest Yet.

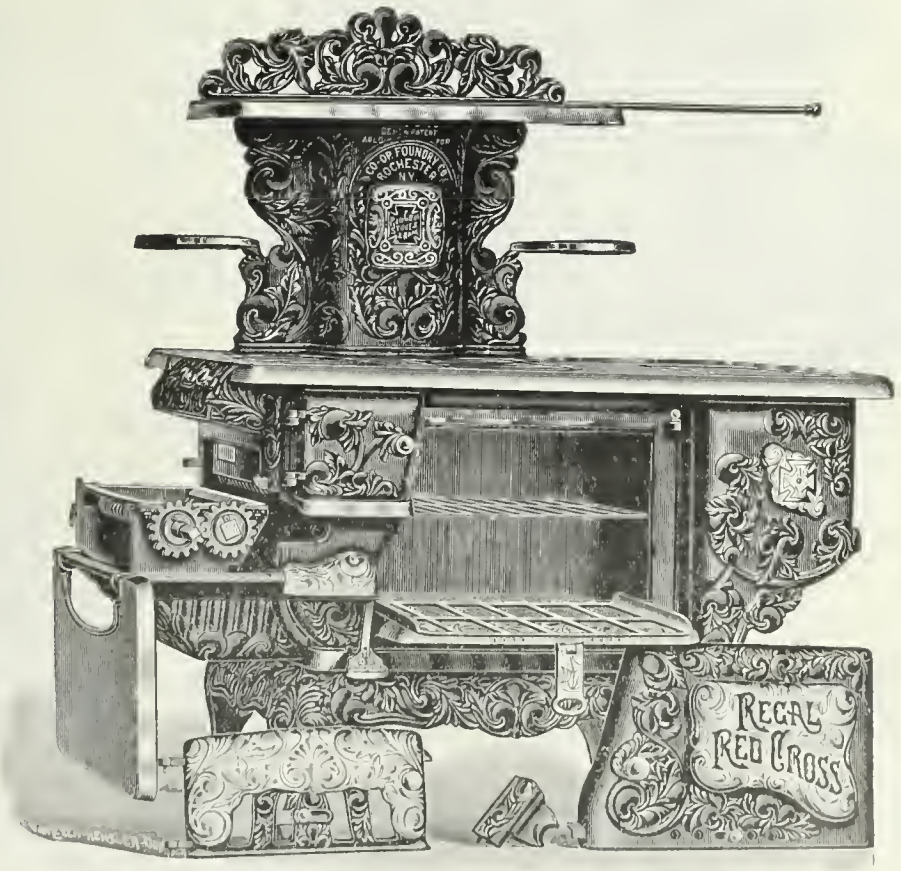
Regal Red Cross Range

The Handsomest in the Trade.

FOUR HOLES.

For Hard or Soft Coal or Wood.

Duplex or Dock Ash Grate.



OUNDRY CO., Rochester, N. Y.

N & SONS, Milwaukee, Wis.

A Complete "DIGHTON" Line of Sizes.

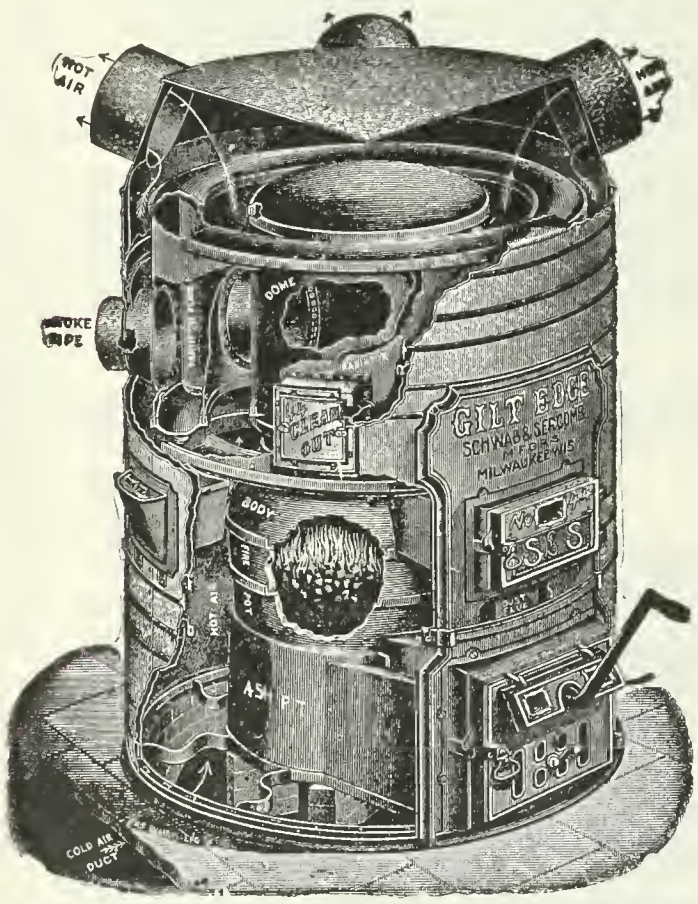
No. of Furnace.	Diameter of Fire Pot.	Height of Castings.	Diameter of Casings.	List Price of Castings.	List Price of Casings.
19	20 inches.	51 inches	36 inches	$40.00	$8 00
21	22 "	53 "	39 "	48 00	9 00
23	24 "	51 "	42 "	60 00	11.50
25	26 "	53 "	46 "	70.00	14.00
28	29 "	60 "	52 "	100.00	17.00
30	31 "	62 "	52 "	125.00	17.00

The No. 19, 20 inch fire pot we sell at about the price you would pay for other good furnaces having a 17 or 18 inch pot.

The No. 30, 31 inch fire pot, we guarantee will heat any building that has been heated by some other furnace having a 34 or 35 inch pot.

There will be more profit and less trouble in handling the "DIGHTON" than with any other furnace you may have sold.

DIGHTON FURNACE CO., Taunton, Mass.



Gilt Edge Warm Air

AND

Combination Heaters

are leaders embodying points of furnace excellence possessed by no other furnaces. A large variety of sizes and styles, each especially adapted for a certain class of fuel. We are manufacturers of a complete line of warm air registers, safety pipe and tin galvanized iron furnace fittings.

R. J. Schwab & Sons Co.,

MILWAUKEE, WIS.

KEEP UP WITH THE PROCESSION.

CONTRACTORS USING OUR BOILERS

Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

If this interests you drop us a line and receive our NEW Catalogues and Prices.

KEWANEE BOILER COMPANY

Home Office and Factory,

KEWANEE, ILLINOIS.

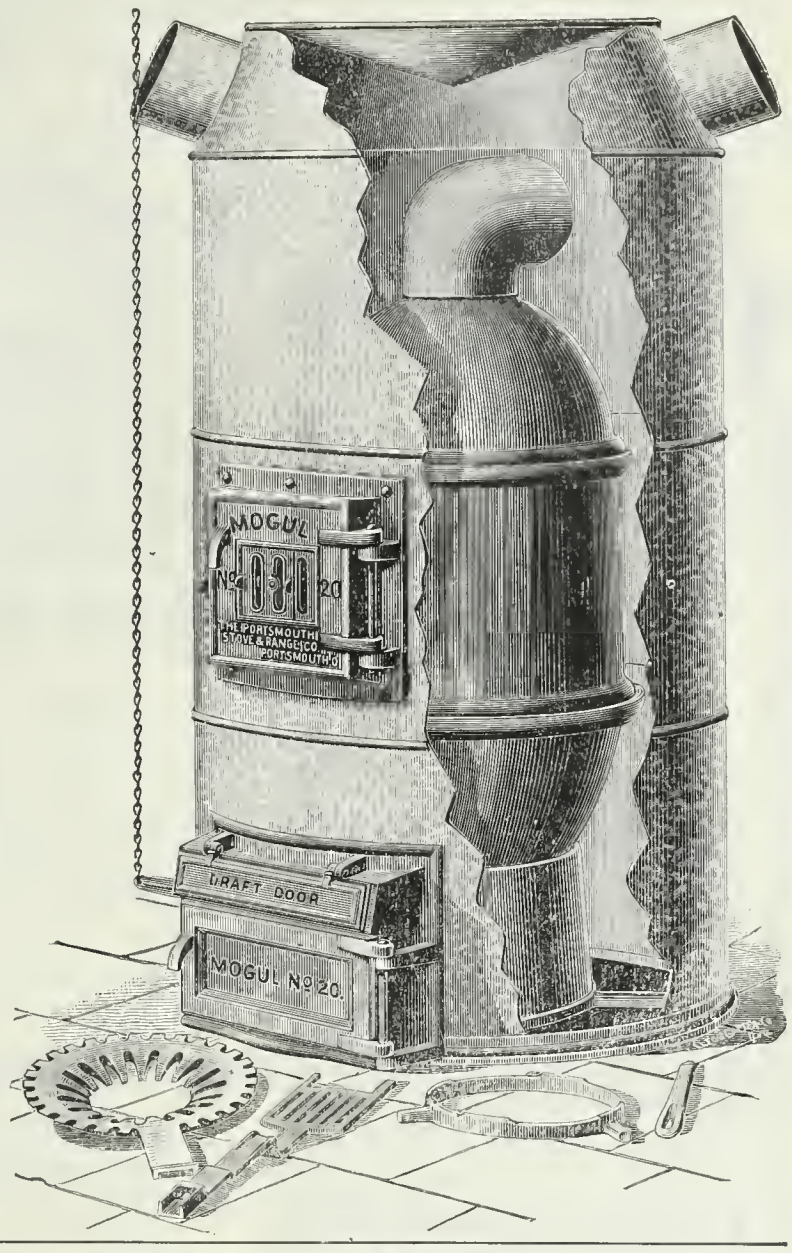
Chicago Store, 169 Lake St.

THE MOGUL FURNACE

Diameter of fire pot	19½ inches.
Height to top of elbow	56 "
Height to bottom of pipe collar	46 "
Diameter of ring where casing fits	31½ "
Weight	800 pounds.

Last year we had a demand for our No. 1 MOGUL to be used as a furnace and the satisfaction it gave in use was so great that we decided, this year, to make it in regular furnace form and at a price that would bring it within the reach of small householders and all kinds of storekeepers or others having large rooms to heat It is made with regular furnace joints for cement from the bottom up; also provided with draw center anti-clinker grate, which can be taken out and replaced through the ash pit. The fire pot has fingers at the bottom on the inside to assist in grinding up the cinder and cleaning the fire.

The No. 20 MOGUL is offered, not to take the place of a large high priced furnace, but to take the place of smaller ones, as well as fill a place that even smaller furnaces do not fill because they are too light and small as well as too complicated and high priced. It is plain and very heavy, with few joints, will do the work and outlast a number of the light furnaces that cost double the money GET OUR PRICE, it is no higher than is asked for a good stove, and you will GET OUR MOGUL, which is cheaper to operate than a hard coal base burner that heats only one room, while the MOGUL will heat a whole house comfortably in all parts.



The Portsmouth Stove & Range Co.,

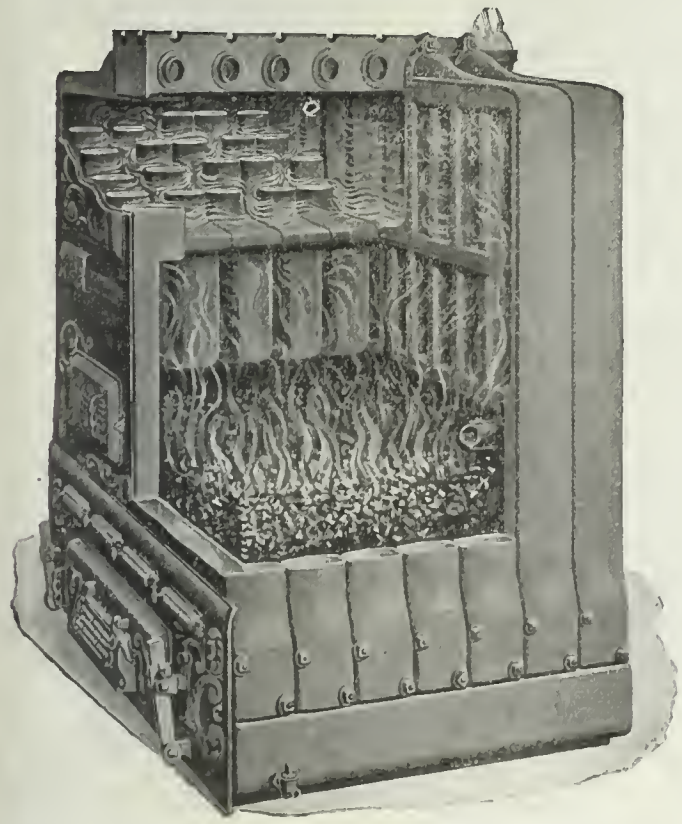
PORTSMOUTH, OHIO.

THE BUSIEST MAKERS of STOVES & RANGES IN THE WORLD

MORLEY BROS., Saginaw, Mich.,

Agents for Northwest.

HENDERSON THERMO HEATER



Has many excellent talking points, not mere points to talk about, but decided advantages that the house owner appreciates and will pay for. It is easy to handle, easy to erect, easy to operate, durable, and, in case a section breaks, temporary repairs can be made in an hour or two, and the heater used while new parts are being procured.

The exclusive sale of our heaters in your city is sure to become profitable.

Now is the time to secure it.

The Prizer-Painter Stove and Heater Co.

READING, PA.

New York Sales Agency, PHELPS BROS., 284 & 286 Pearl St.

Boston Sales Agency, BIXBY & EDDY, 215 Franklin St.

HOT WATER AND HOT AIR

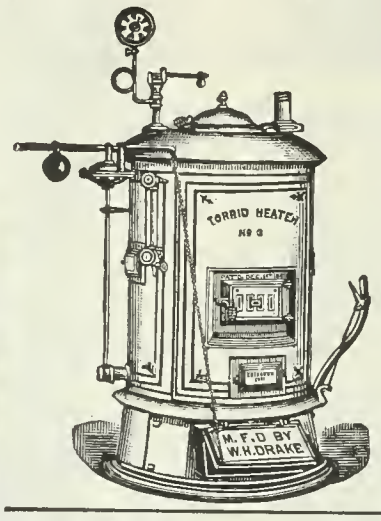
HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

"TORRID HEATER."
FOR STEAM OR HOT WATER



It is Practical in Design.
It is Safe, Being Tested to 200 Pounds.
It is Easy to Manage and Keep Clean.
It is Durable.
It is Sectional and Easily Handled.
It has No Packed Joints.
It is Self-Feed or Surface Burning.
It has the Torrid Patent Rocking and Dumping Grate.
It is Low in Price.

SEND FOR CATALOGUE.

MANUFACTURED BY
W. H. DRAKE, No. 36 Clinton St., NEWARK, N. J.
Factory: Hackettstown, N. J.

KINEO FURNACES
FOR WOOD.

The Kineo Furnaces are built to secure durability and heating qualities. The smoke enters the radiators on the back and passes entirely around the radiator before entering the chimney, making them the most powerful heaters known. Also manufactured in two sizes with steel radiators.

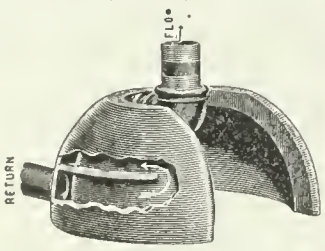
SEND FOR CIRCULARS.

Noyes & Nutter Mfg. Co.,
BANGOR, MAINE.

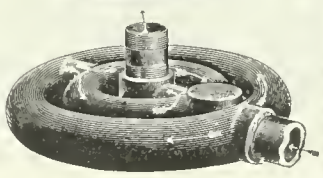
The Champion
Hot Water Combination Boilers.

They Fit Any Furnace.

Base section when used without ring sections.



Ring Section.

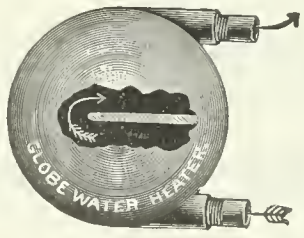


These Boilers are made in three sizes diameter, and from 100 to 600 square feet radiation capacity.

Will heat those cold rooms, or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work.

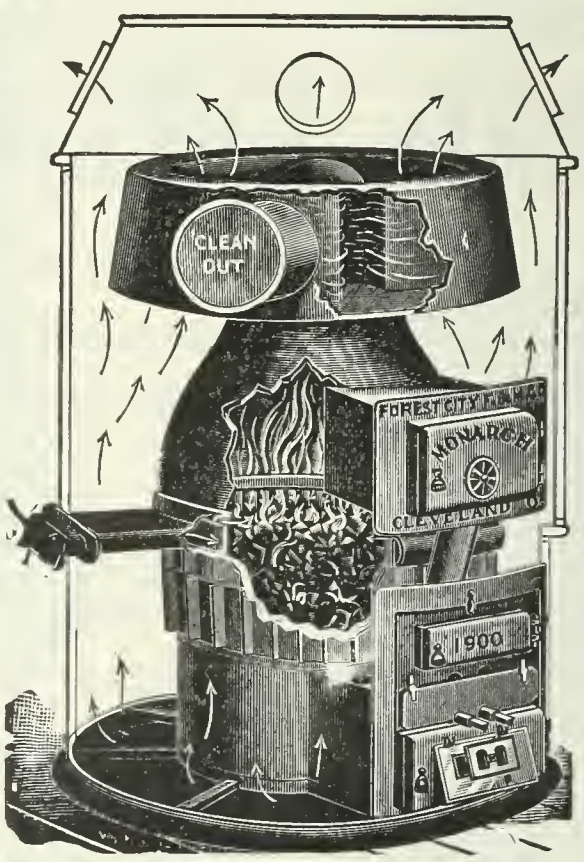
GLOBE WATER HEATER

Attached to any Furnace will heat water for domestic use.



Write for new circular. Manufactured by

FRANK D. STOLZ,
115 Lake St., - - Chicago, Ill.



MONARCH FURNACES.

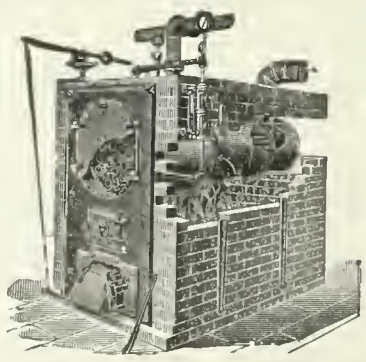
All Cast Iron. For Hard and Soft Coal. At Foundry Prices to Large Buyers.

Inquiries Solicited.

OUR NEW CATALOGUE JUST OUT.

The Forest City Foundry and Mfg. Co.
81 Elm Street,
CLEVELAND, OHIO.

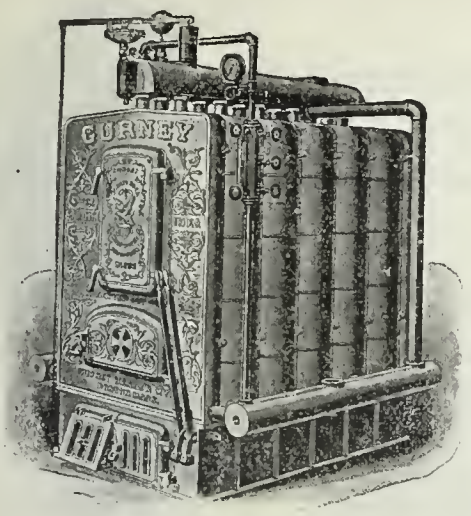
Gray Iron Castings to order. High grade only.



Vance Boilers.

The most economical Steam and Hot Water Boiler on the market. Write for Catalogue and Price List.

VANCE BOILER WORKS,
373 Atkinson St., Geneva, N. Y.



Bright Idea Steam Boiler.

Nothing Equal to It.

It was Goethe, yon recollect, who declared that "to find some one who thinks as I do strengthens my belief." Well, here's what one individual who has thoroughly tested the

GURNEY

"Bright Idea" Heater

thinks of it: "My honse is large and exposed, but I can heat the whole of it with the mercury at zero outside. I believe there is nothing equal to the 'Gurney' for heating a house."

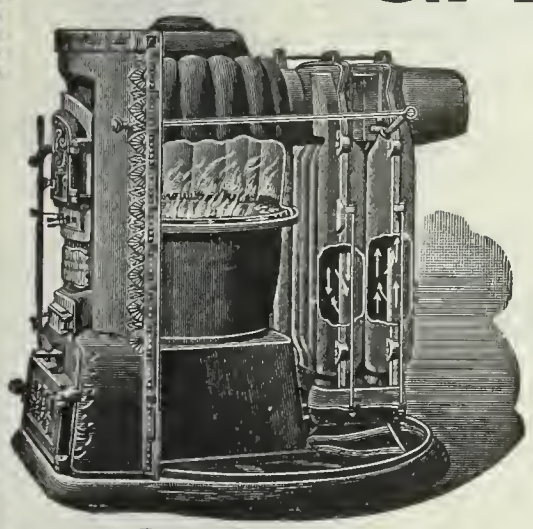
If such testimony were rare, of course it would carry less weight, but when we assure you that we have on file hundreds of letters of the same tenor, it seems almost impossible for you not to comprehend the excellence of the "Gurney" Heaters.

But, having comprehended it, why not make use of it? Become our agent and then you'll share its benefits. For just so long as merit finds appreciation, just so long are "Gurney" Heaters bound to sell in increasing numbers.

GURNEY HEATER MFG. CO., 74 Franklin St., BOSTON, MASS.
111 Fifth Ave., NEW YORK CITY.

Western Selling Agents, JAMES B. CLOW & SONS, 222-224 Lake St., Chicago, Ills.

BENGAL FURNACES



If you want to have a successful season, lose no time in securing a

BENGAL AGENCY.

BENGALS ARE THE LEADERS.

THEY HAVE NO COMPETITORS IN THEIR CLASS.

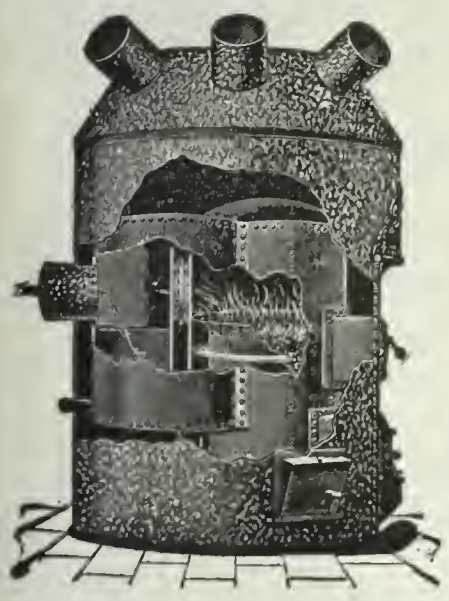
Burn Perfectly Anthracite or Bituminous Coal or Coke and—
Heat the House—Not the Chimney.

Secure a BENGAL AGENCY at once.

WRITE FOR CATALOGUE AND FULL PARTICULARS.

Eastern Selling Agents,
GURNEY & CO.,
Washington, Hanover & Elm Sts.,
Boston, Mass.

FLOYD, WELLS & CO.
ROYERSFORD, PA.



WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

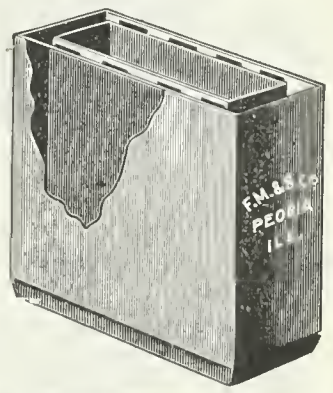
Absolntely gas and dust tight. A great heat producer but a fnel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

SEND FOR CATALOGUE. PEORIA, ILLS.



"The Handy Furnace Pipe."

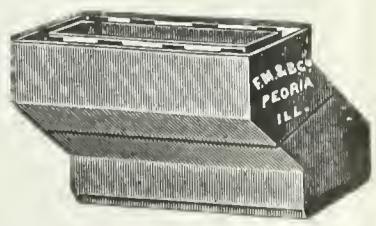
MADE WITH A VIEW OF BEING SAFE.

The saving of labor in pntting it np really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,

SEND FOR CATALOGUE. PEORIA, ILLS.

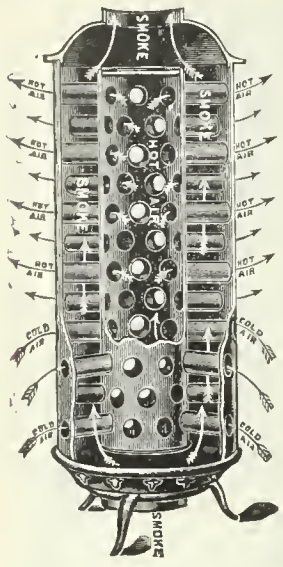


BRAND STOVE CO.

STOVES, RANGES and FURNACES.

SEND FOR CATALOG.

MILWAUKEE, WIS.

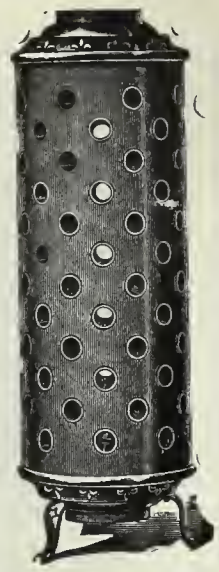


4,866 sq. ins.

Principle right,
In construction.
Results right,
In saving 1-2 the fuel.
Profit right,
In liberal discounts.
Everything right,
in the ROCHESTER RADIATOR
AS MANUFACTURED BY THE

ROCHESTER RADIATOR CO.,

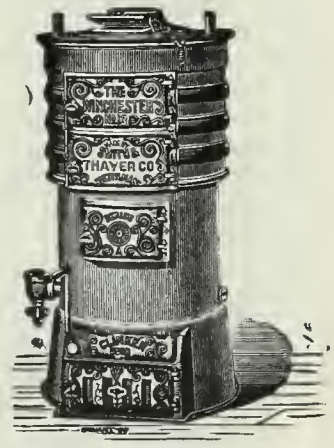
100 Furnace St., ROCHESTER, N. Y.

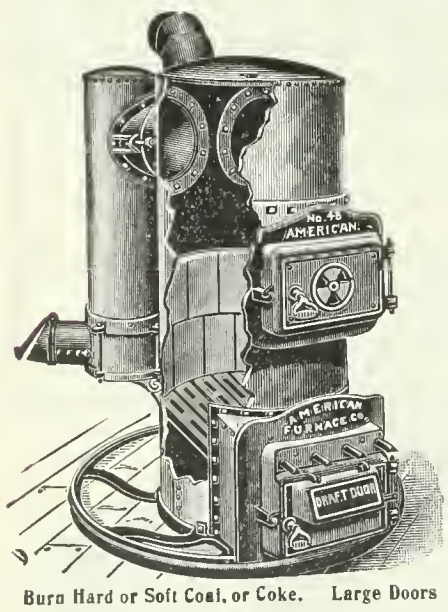


WINCHESTER

How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.

HEATER.





Burn Hard or Soft Coal, or Coke. Large Doors

About Fire Pots.

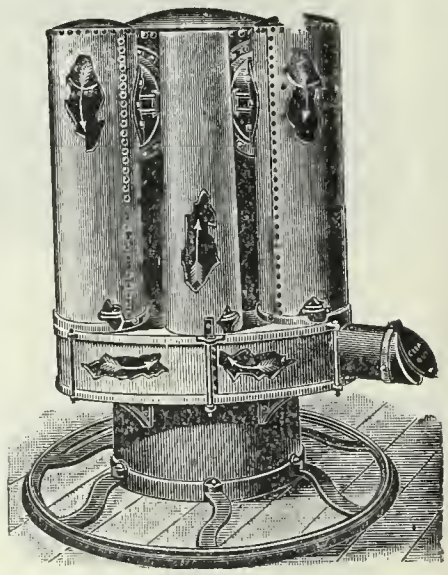
We formerly lined our fire pots with cast iron—then they cracked and warped. Now we use fire brick for lining and will guarantee it for five years. The lining is replaced through the fire door.

The **AMERICAN FURNACE** is made strong in places where other furnaces have proven weak; it is made of heavy steel and riveted tight like a boiler. Will burn any kind of fuel.

You can only build up a permanent furnace business by handling a first-class furnace. We manufacture for the better class of trade.

The American Furnace Co.,

1911-13 PINE STREET, · ST. LOUIS, MO.


Large Radiators, easy to clean out.

Write for prices and secure the agency before the other fellow gets it.

WE ARE SENDING MONEY TO YOU.

Our advertising will bring inquiries to your store and every inquiry means a profitable customer.

Are you prepared to show the

NEW ERA RADIATORS

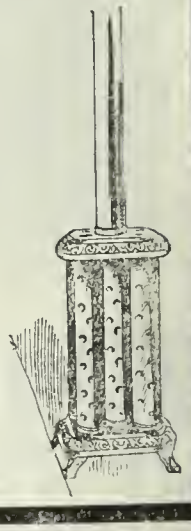
they will ask for? Or are you going to let this business go to your competitor?

Send for price list—we can satisfy you that we have a money making proposition for you.

Customers supplied with handsome show cards, booklets and circulars, free.

WILMOT CASTLE & CO.,

76 Elm St., Rochester, N Y.



An Undisputed Fact

THAT . . . .

The Peach Oil Heater

has proven beyond all doubts

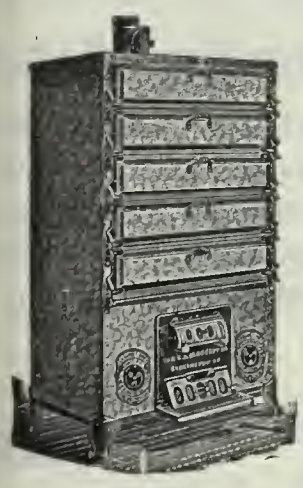
An Absolute Success As a Powerful Heater.

Economical, Durable and Ornamental,

and at a PRICE that brings it within the reach of every Household.

For further information address

THE DANGLER STOVE & MFG. CO.,
CLEVELAND, - OHIO.



CABINET PORTABLE OVEN.

OUR LATEST PRODUCTION.

BAKES EVENLY BY THE CIRCULATION OF HOT AIR.

FOR BAKERS, CONFECTIONERS, HOTELS,

Also the best oven for Core Baking, Japanning, Enameling, etc.

Made in six sizes, single and double, for coal, wood, natural or artificial gas.

SEND FOR CATALOGUE.

The G. S. BLODGETT CO., Burlington, Vt., U. S. A.

CLAD'S Hot Water Stove.

PRICE-LIST ON APPLICATION.

V. CLAD & SONS,

MANUFACTURERS OF

French Ranges and Broilers,

119-121 South Eleventh St.,

PHILADELPHIA.

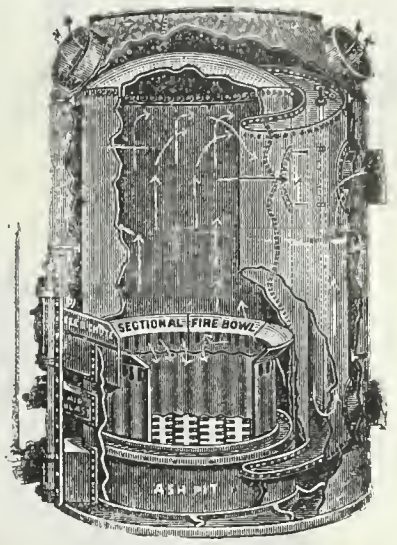
FOR SMART WORK

Use only "The Dean" Boilers

MADE BY

DEAN BOILER CO., 73b Pearl St. BOSTON, MASS.

THE LENNOX



Steel Furnace.

MADE BY

THE LENNOX MACHINE COMPANY.

East Fredrick St., Marshalltown, Iowa

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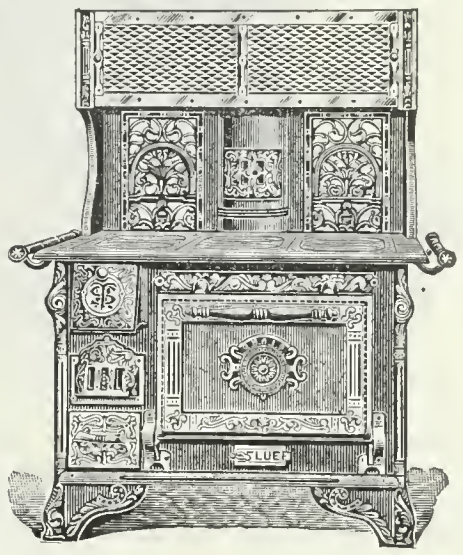


Ohio and U. S.

Wrought Steel **Ranges**

We are pioneers in steel range business; old in experience yet adopt modern up-to-date methods. Write for our catalog.

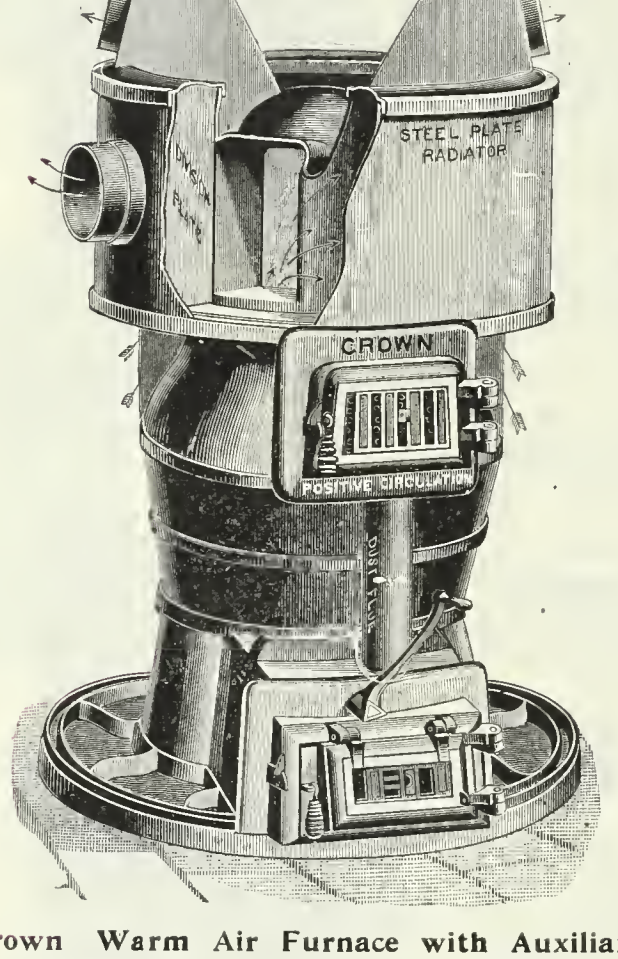
Tinnerman Steel Range Co.,
CLEVELAND, O.

INDEPENDENT STOVE CASTERS.

Better than a truck, fits any stove without adjustment. No cross arms to interfere when sweeping under stove. For moving or use under stoves on sample floor, blacking room or warehouse. Enables one man to move a stove. You need this in your business.

INDEPENDENT REGISTER CO.,
152 Champlain Street,
Cleveland, O.

CROWN FU



Crown Warm Air Furnace with Auxiliary Flues for Long Distance Heating.

ARE ALL SPECIALTIES—EAC
ANY OTHER FURNACE MADE some

Thus the Crown Warm Air
the use of a cold air supply be

The Crown Warm Air Twin
requirements of large building

The Crown Warm Air Furn
Distance Heating is the only F
remote or unusually exposed, a

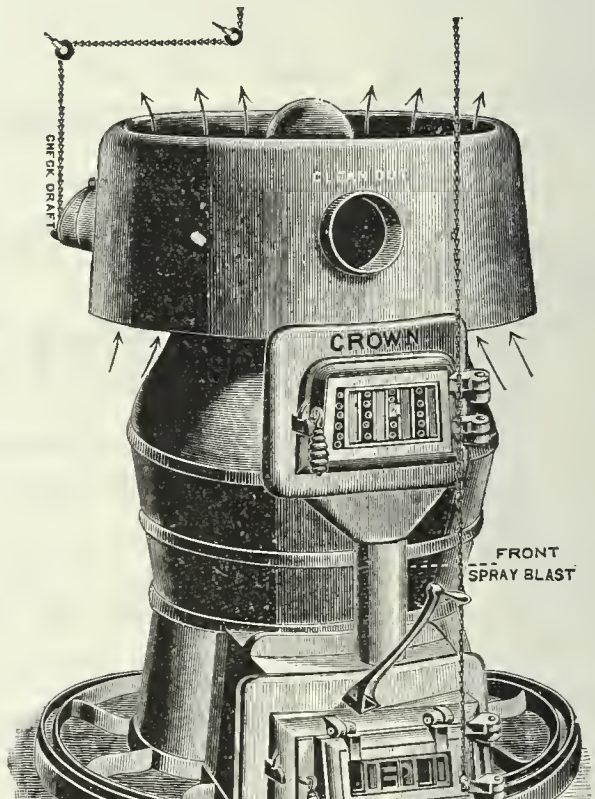
Crown War

With Auxiliary Tubes

In the installment of nearly every warm a
heat than others, due either to their remote
and facilitate the passage of hot air to these r
these auxiliary flues—the only things of their
circulation of heat is obtained in said rooms.

The Crown Warm Air Furnace

With Return Flue Cast Iron Radiator is especially designed for soft coal. The special feature of this furnace is the front spray blast. This conducts the air through a heavy pipe running from the top of the ash-pit to the under side of the feed-neck, where it is introduced between two highly heated plates and forced over the top of the fire. This furnace saves fuel. It burns hard coal, soft coal, wood or gas. It is a great heat producer.



Crown Warm Air Furnace with Return Flue Cast Iron Radiator, Especially for Soft Coal.

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Starting
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MARCH-BROWNBACK ST

RNACES

NE COVERING BETTER THAN
special problem in house heating.
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with Auxiliary Flues for Long
ce to heat rooms that are very
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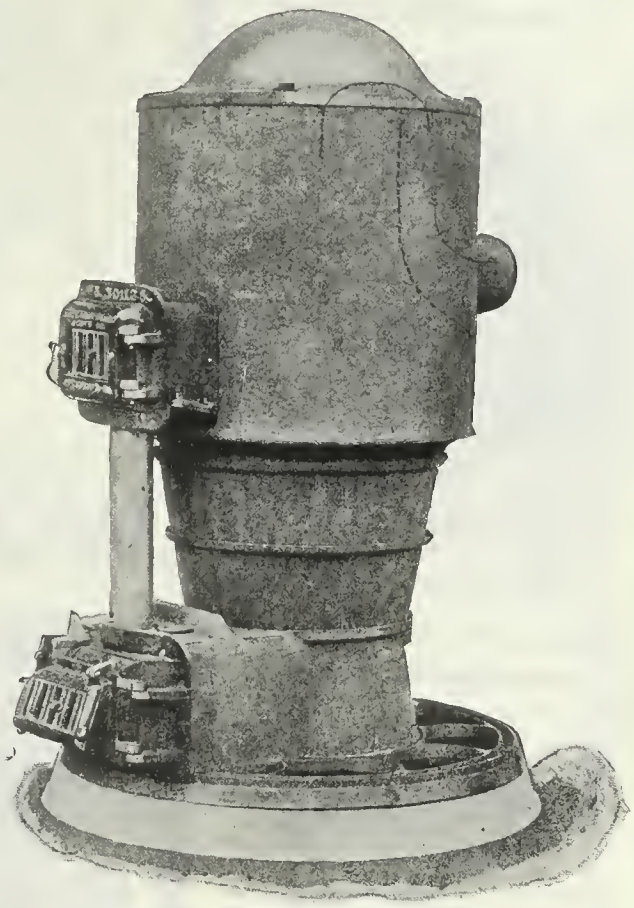
Air Furnace

ong Distance Heating.

ce some rooms are found more difficult to
n or to their unusual exposure. To expedite
exposed rooms we have devised and invented
existence--and by means of which a positive



The New Crown Warm Air Furnace.

Crown
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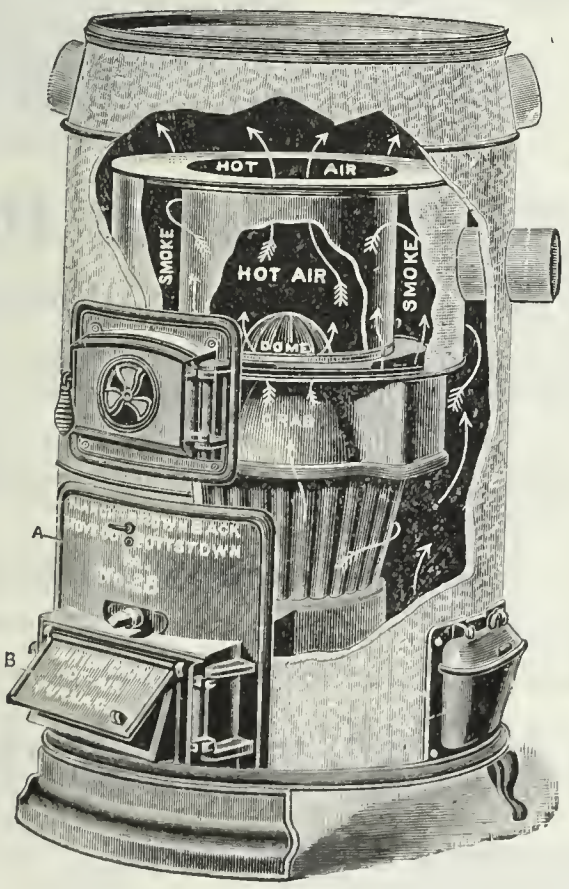


Junior Crown Furnace.

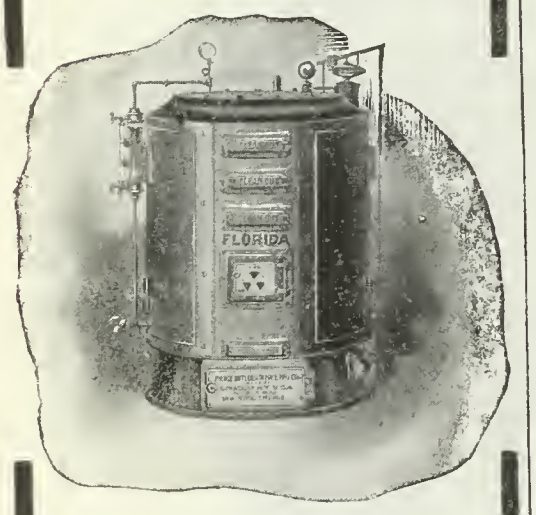
The New Crown Warm Air Furnace.

Entirely new. A "Heavy Duty" furnace, being very powerful, staunchly made, and moderate in price. Just the furnace to tackle the severest use of Soft Coal with. Just the furnace to tackle the severest use of Hard Coal with. The simplest and most durable furnace for soft or hard coal ever made. The drum of this furnace made of extra heavy steel and closely riveted. It is mounted with hollow rods, admitting the free circulation of air and entirely preventing them from burning out. The drum at the top of the fire pot is reinforced with an inside steel or cast rim of sufficient height and thickness to completely protect the lower part of the drum from destruction by the severest use of either hard or soft coal. The peculiar construction of the drum top enables the gases produced by combustion to unite with the supply of highly heated air and become consumed before leaving the furnace.

VE CO., . Pottstown, Pa.

Pierce Boilers Perfect Burners

For Steam and Water Heating.



Florida Steam Boiler.

Pierce Steam and Water Boilers are unequaled for economy of fuel consumption, combined with large heating capacity.

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MAKERS OF

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HOT-AIR AND COMBINATION AIR AND WATER FURNACES

LAUNDRY STOVES CONFECTIONERS' STOVES

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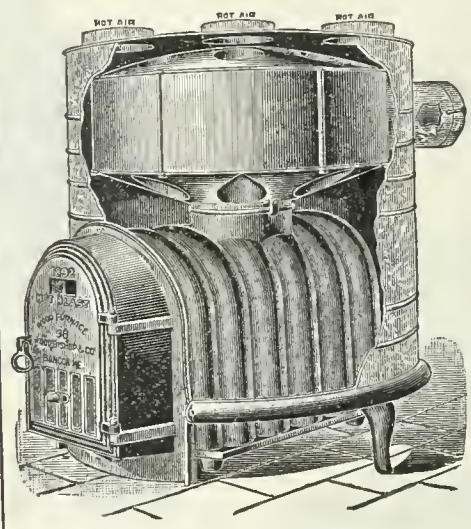
WOOD FURNACES.



THE HOT BLAST.

Established 1839. Incorporated 1894.

OUR IMPROVED MONITOR.

The most powerful heater made.

2 SIZES, PORTABLE OR BRICK SET.

No. 38 for 3 ft. wood. No. 50 for 4 ft. wood.

OUR LOW PRICED HOT BLAST.

The most practical, durable heater on the market at anywhere near its cost.

FIRE BOX BODY made in one piece, corrugated, is very heavy and cannot break or warp.

RADIATOR with heavy cast iron heads, heavy plate iron shell and hot air flues, has extra large radiating surface and is self cleaning. Every part of radiating surface is directly exposed to fire, allowing no possibility of creosote in the apparatus. No wood grate. Fuel burns on the ashes in the only practical, economical way.

3 SIZES, PORTABLE OR BRICK SET.

Nos. 36, 42 and 48, for 3, 3½ and 4 ft. wood.

Thousands in use in all sections of the country. Testimonials and full particulars sent on application to the manufacturers.

WOOD & BISHOP CO., BANGOR, MAINE.

Registers and Ventilators

We are not in the Combination.

Send for Prices.

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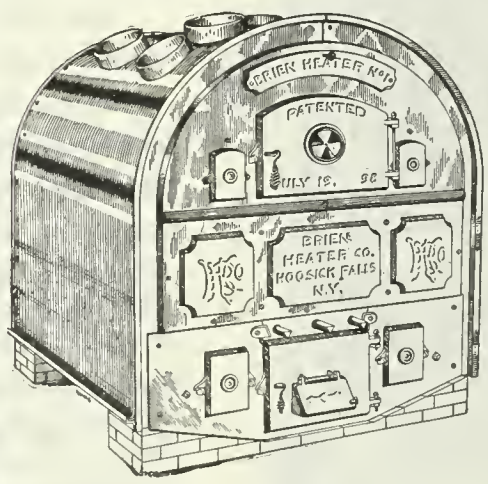

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A perfect, all cast WOOD or COAL burner. There is no other Hot Air Furnace as low down as the "BRIEN."

Write for territory, catalog and prices.

BRIEN HEATER CO.,

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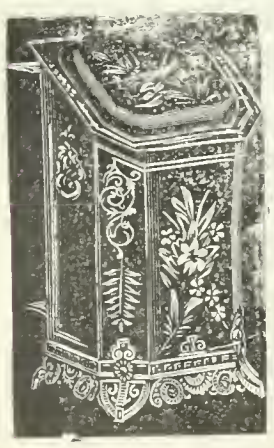

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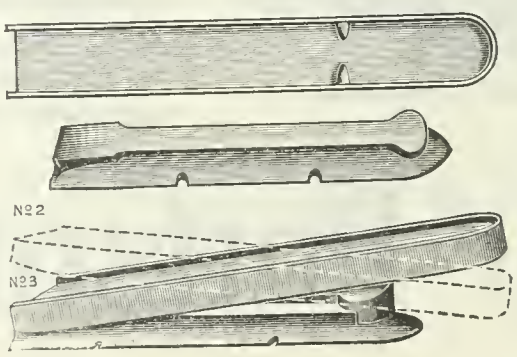
Plain and Ornamental Decorations.

Send for Catalogue.

The Cincinnati Stamping Co., Cincinnati, O.

Improved ATLAS Radiator PEDESTAL



9½, 11 and 12 inches.

AVOID CUTTING THE CARPET.

YOU CAN LEVEL ANY RADIATOR.

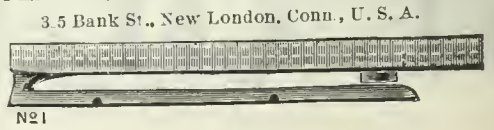
NEAT IN APPEARANCE.

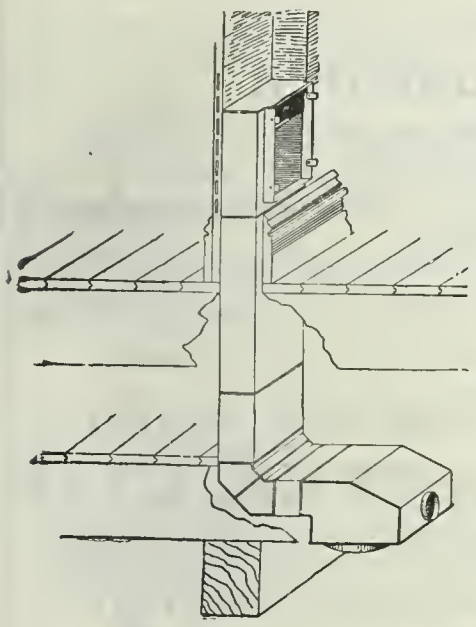
— 20,000 SOLD. —

Send for Circular and Prices.

ATLAS RADIATOR PEDESTAL CO.,

35 Bank St., New London, Conn., U. S. A.





WE WANT YOUR HEAD
FOR A MOMENT

To put into it several reasons why you should use

SAFETY FURNACE PIPE.

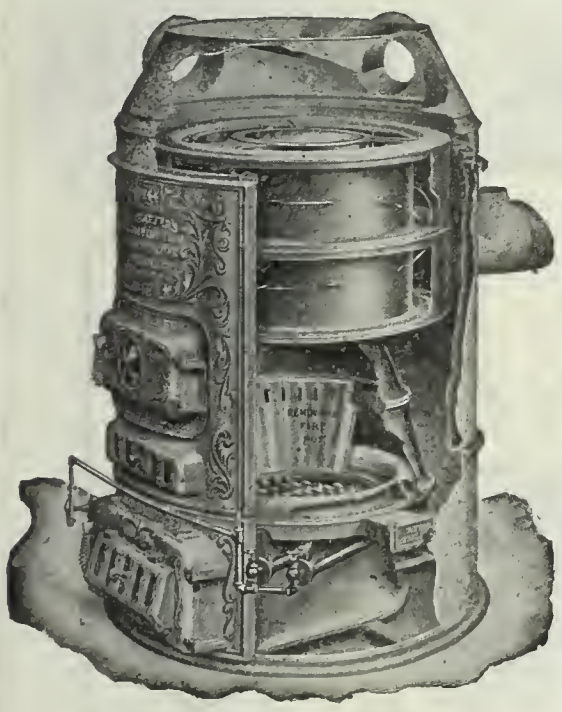
THE PRICE IS RIGHT.
MATERIAL IS RIGHT.
WORKMANSHIP IS RIGHT.

And the Best Design and Joint on the Market.

We have many more reasons, and good ones too, contained in our catalogue, which we shall be glad to mail you on request.

SAFETY FURNACE PIPE CO., No. 11 and 13 East Atwater St., Detroit, Mich.

Schaffer's Combination Gas and Coal Furnace.



The Most Economical and Durable Gas Furnace On the Market.

It will heat a house as cheaply with Gas as with Hard Coal, and is so arranged that the change from one fuel to the other can be made in a few minutes, without removing the burner or grate, or disconnecting the gas piping.

Absolutely No Condensation.

For Catalogue and Price List, write to

JOHN P. SCHAFFER,
181 WOOD ST.,
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BRIDGEPORT STOVE WORKS,
BRIDGEPORT, ALA.

MANUFACTURERS OF

COOKING and HEATING STOVES
and STOVE HOLLOW WARE.

CATALOGUE SENT FREE ON APPLICATION.

Stove Dealers

will make money and save money by using

Dixon's Graphite Cement.

There is nothing equal to it for repairing fire brick in stoves, furnaces etc. Let us send you sample and prices.

JOSEPH DIXON CRUCIBLE CO., - JERSEY CITY, N. J.

AS GOOD AS GOLD IS A

RICHMOND HEATER.

IT CUTS YOUR COAL BILL IN TWO.
IT WARMS YOUR HOUSE FROM CELLAR TO GARRET, AND ALMOST TAKES CARE OF ITSELF.

Write for Catalogue.

The Richmond Stove Co.
NORWICH, CONN.

STOVE REPAIRS.

Stove dealers' SUPPLIES of all kinds.

Water Fronts a Specialty.

WE GUARANTEE PROMPTNESS IN FILLING ORDERS

Catalogues, Order-Books, Postals or Envelopes sent upon application.

Largest Jobbers in New England.

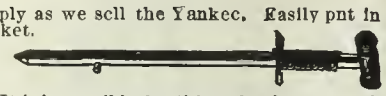
HENRY N. CLARK CO.,
56 and 58 Union St.,
BOSTON, MASS.

The YANKEE Hot Air DAMPER (Improved All Steel)

THE YANKEE EXCELS.

Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe. Rod is made of ¼ inch cold-rolled steel and slips into damper very smoothly. **Sample sent to any Dealer without charge.**



It is impossible for this rod, when in position, to move either way.

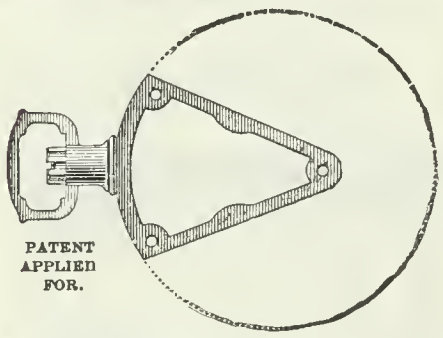
The S. M. HOWES CO., Manufacturers, 40-46 UNION ST., Boston, Mass.

Sizes: 6, 7, 8, 8½, 9, 10, 10½, 11, 12, 12½, 14 and 15.

NEW YORK: A. L. Canfield, 284-286 Pearl St. CHICAGO: Excelsior Steel Furnace Co.

THE MALLEABLE IRON

DAMPER CLIP.



EASILY ADJUSTED
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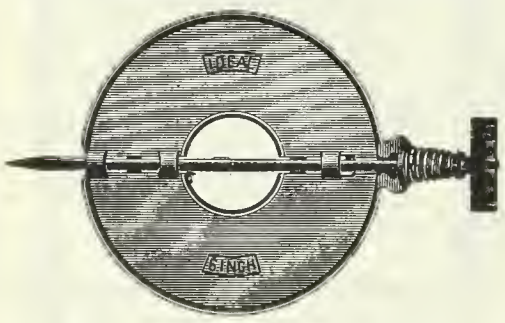
WRITE FOR PRICES.
THE BROHARD CO., - Phila., Pa.

IDEAL DAMPERS, COVER LIFTERS



AND POKERS

HAVE NON-HEATING HANDLES OF ELEGANT DESIGN AND FINISH. THEY ARE THE BEST.

STOVER MFG. CO.,
164 RIVER ST.,
FREEPORT, ILLS.

Why not re-model your Oaks and Oval air-tights so as to use cast iron where you now use sheet steel? More attractive!

Planished and Sheet Steel will be scarce.

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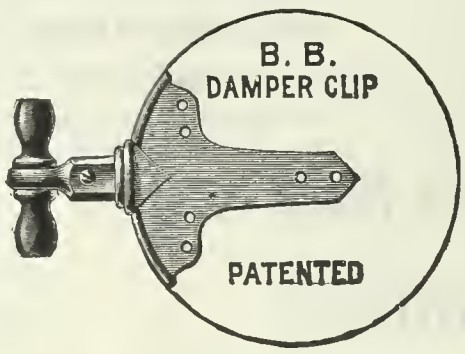
Cleveland, Ohio.



The B. B. Patent DAMPER CLIP

To remove Handle, simply loosen **Nut** *half way*—unnecessary to remove Bolt.

BEST AND CHEAPEST.

Send for Sample and be convinced.

All kinds of Dampers—Plain, Uncle Sam, American and others always in stock.

Send for catalog.

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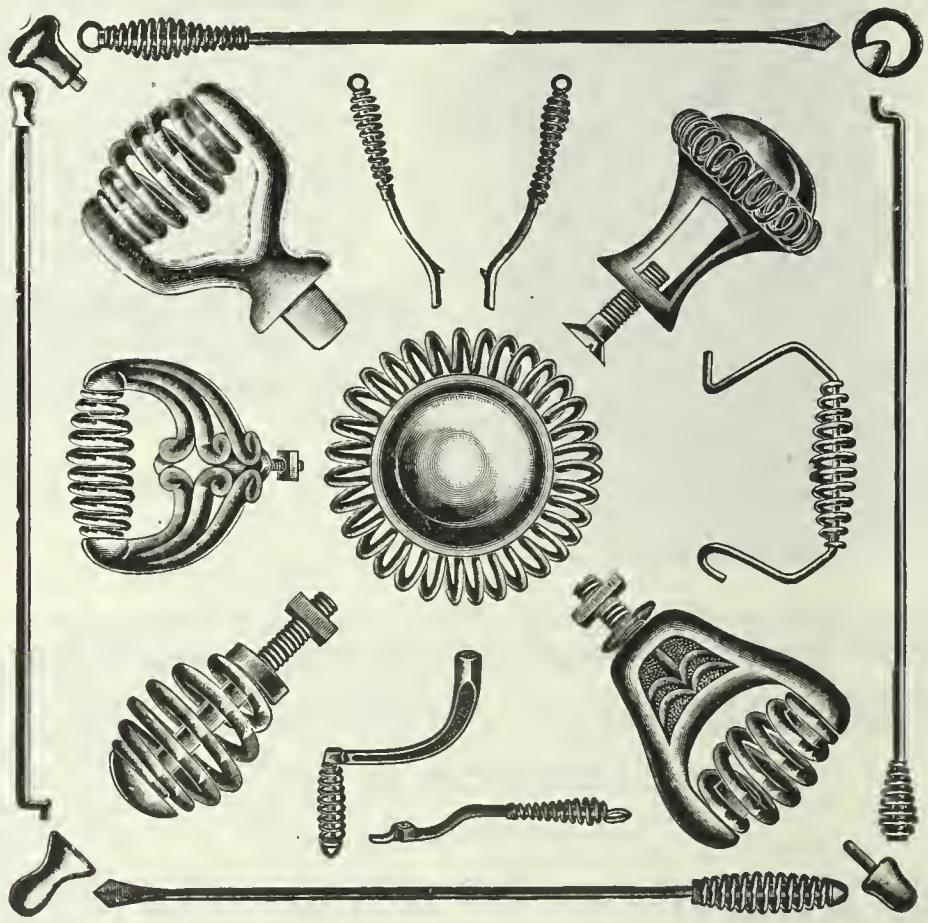
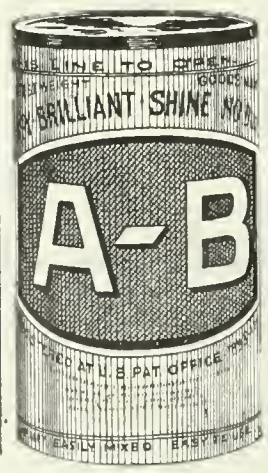
Tinners' Hardware and Roofers' Supplies, PHILADELPHIA.

ARCTIC STOVE TRIMMINGS.



FANNER MFG. CO., - CLEVELAND, O.



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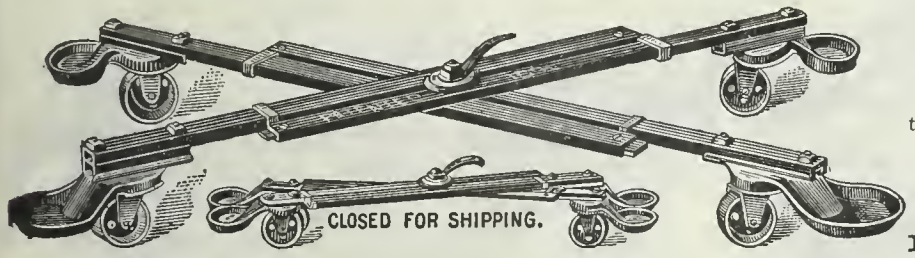
NOTICE.

Do you know that the new A-B dealers' stove polish is made dry and you can thin it as you wish. It is the cheapest, brightest and easiest polish to use—no dust—no rust—waterproof. Keeps in any climate. Put up in 5 lb boxes—Patented. No tin cans to pay for. Mixes quicker than paste; no drying up, good always. Used by a great many stove manufacturers who are sending duplicate orders. **Sample mailed Free.** Send for price list, it will save you money.

AYLING BROS.,
Sole Manufacturers and Patentees of A-B Stove Polish.
Office and Works, 14 Haddon Ave.,
Address Department B. CHICAGO, ILL.

The Model Stove Truck is out of sight when under a stove.

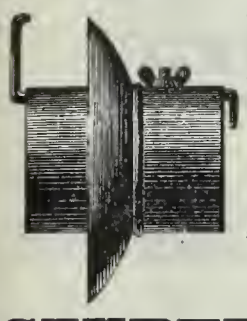


Is all steel, has only one adjustment, is practically indestructible.

We offer to take back and refund money if, after a month's trial, the Model is not satisfactory.

SEND FOR CIRCULAR AND PRICE.

The S. M. HOWES COMPANY,
BOSTON, - - - MASS.



HAYLOR'S HOLD FAST STOVE PIPE

Is made 9⅛ inches long, each joint is ready, fitted with fastening device, and beautifully designed gilded collar, which measures 10⅛ inches in diameter for the six inch pipe, and 11⅛ inches in diameter for the seven inch pipe. Is sold with a guarantee that it will hold the stove pipe firm to the flue, and at the same time the pipe will not go in flue over 4 inches. Is absolutely tight and will not come loose. They are packed a half dozen, complete, to each crate.

Order from Your Jobber.

STUBER & KUCK, - Peoria, Ill.

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Factory, Charlestown.

Duplicate Postals,
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Stamped Envelopes,
Catalogs,
(Postage on Orders Allowed.)
FURNISHED UPON APPLICATION.

Largest and Best Stock.
Special Stock of Water Fronts
Thoroughly Fitted and Tested.

MICA

ASSORTED PACKAGES.
Put up expressly for the Retail Trade.

ONE POUND—4 SIZES. ¼ lb. each size.

North Carolina -	$2.00	4½ x 6	2½ x 3
Wyoming - - -	1.70	2¼ x 3¼	2¼ x 4½

TWO POUND—8 SIZES. ¼ lb. each size.

North Carolina -	$3.75	2 x 3	2¾ x 4
		2 x 4	2¾ x 3½
		3 x 3	2½ x 4½
Wyoming - - -	3.20	3 x 4½	4½ x 6½

THREE POUND—12 SIZES ¼ lb. each size.

		4½ x 5	2¼ x 4
North Carolina -	$5.20	3¾ x 4½	2½ x 3½
		3 x 8	2 x 4
Wyoming - - -	4.25	2¼ x 4½	2¾ x 2¾
		2½ x 3	2¾ x 3½
		2 x 3	5 x 6½

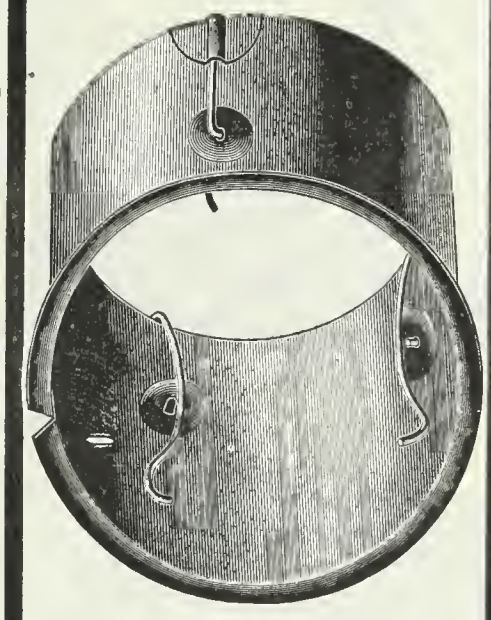
ABOVE PRICES NET. NO DISCOUNT.

EUGENE MUNSELL & CO.,
NEW YORK and CHICAGO.

THE GEORGE W. COPE Stove Pattern Works.
ORIGINAL, ARTISTIC AND PRACTICAL CONSTRUCTION
Cor. Randolph and Atwater Sts.,
DETROIT, : : MICH.

PATTERNS
FOR STOVES AND HEATERS.
First-class in wood and iron.
Vedder Pattern Works. - Troy, N. Y.

The S. & S. Patent
Stove Pipe Thimble

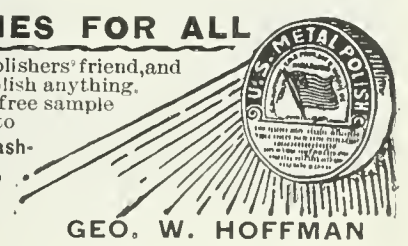


Locks the Pipe from Pulling Out, and from Pushing In and Closing the Draught. Will last a lifetime. Nothing to wear out, and costs but a trifle. *Send for sample* and prices.

CITY FORGE & IRON WORKS,
DAYTON, OHIO.

SHINES FOR ALL

It is the polishers' friend, and will polish anything. Write for free sample to 297 E. Washington St., Ind'p'l's, Ind.



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MICA
ONLY.

Prepared expressly for the Stove and Hardware Trade.

Two Grades: "North Carolina" and "Nevada."

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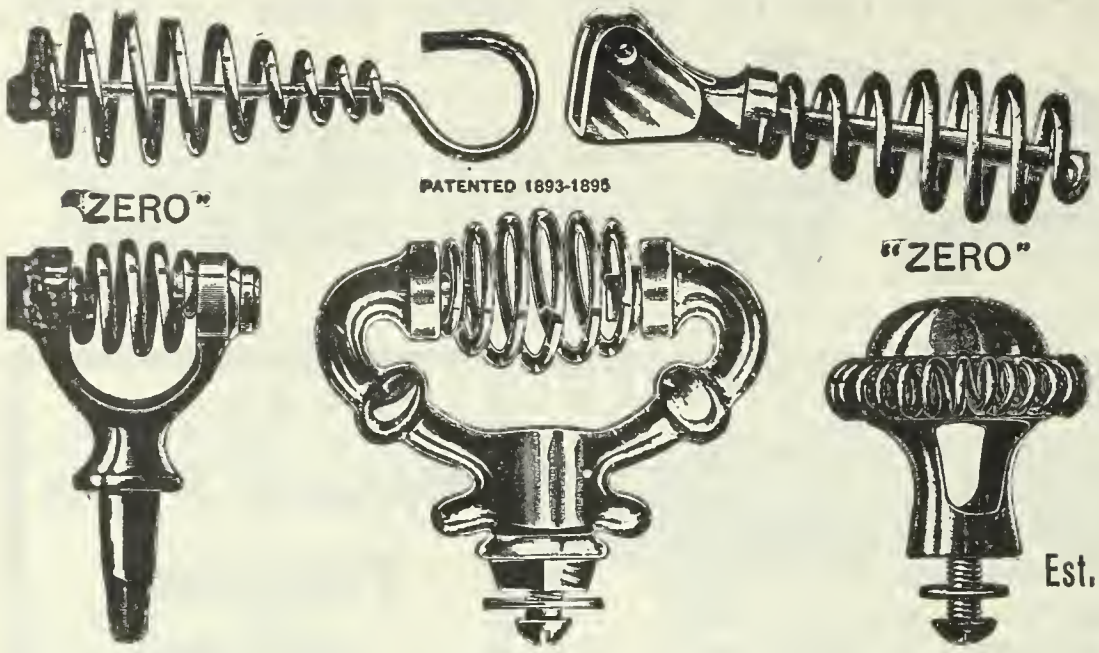
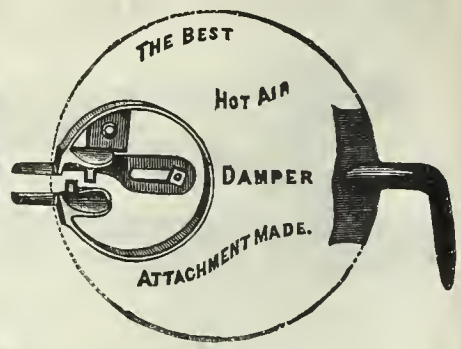
THE PALERMO MICA CO.,
115 Beekman St., New York.





"ZERO"
WIRE GOODS.
MANUFACTURED BY
Est. of W. F. GREENE,
TROY, N. Y.

GAS FUEL

We are headquarters for gas fuel, as we are manufacturing large quantities. We can satisfy you as to color, size and density.

Always ready to submit samples and prices.

G. M. SOVERHILL, Sales Agent.
16 Tuxedo Place, Buffalo, N. Y.

RUTLAND FIRE CLAY CO.,
RUTLAND, VT.

A REVIVAL of business

is certain to follow the introduction of **Colebrook's Asbestos Furnace Cement and Stove Putty** in the manufacture of your stoves and furnaces. We do manufacture Asbestos Furnace Cement and Stove Putty for a great many particular people, why not for you as well? Colebrook's Asbestos Furnace Cement and Stove Putty has no equal. Can we not furnish your next order? Put up in all size removable cover cans, tubs, barrels and half-barrels.

MANUFACTURED ONLY BY

W. H. COLEBROOK SONS & CO., Syracuse, N. Y., U. S. A.
LARGEST MAKERS OF ASBESTOS FURNACE CEMENT IN THE WORLD.
CHAS. SMITH CO., Western Selling Agents, 122 Lake Street, Chicago, Ill.

"O.H." ONE PIECE STOVE PIPE Elbows

Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM in throat or under side of Elbow.

HANDSOMEST, HEAVIEST AND STRONGEST STOVE PIPE ELBOW MANUFACTURED.

—SOLE MANUFACTURERS,—

THE LAWRENCE-LETTS ELBOW CO., Ltd., - - Waverly, N. Y.

CABLE ADDRESS, (NICKEL.) LOCAL & LONG DISTANCE TELEPHONE No. 162.

FACTORY & MAIN OFFICE } ALBANY, N.Y.

WESTERN BRANCH, CHICAGO, ILL.

TROY NICKEL WORKS

Albany, N.Y.

POKERS, LID LIFTERS,
KNOBS, HANDLES, and a full line of HARDWARE.

MARCY STOVE REPAIR CO.,

MANUFACTURERS OF

RANGE, STOVE AND HEATER REPAIRS

AND FIRE-BRICK LININGS,

74 Beekman Street, New York.

FOUNDRY, Perth Amboy, N. J.

FIRE-BRICK FACTORY, 36 to 46 South Fourth Street, Brooklyn, L. I.

BRANCH STORES:
South Fourth Street, Brooklyn, L. I. 362 Grove Street, Jersey City, N. J.

CATALOGUES NOW READY.

STOVE REPAIRS
WATER FRONTS
AND EVERYTHING FOR THE TIN SHOP

We can serve you better than anyone else. WHY? Because we have the stock on hand.
Repairs for 20,000 different stoves and furnaces

WRITE FOR CATALOGUE. **H. E. HESSLER CO., Syracuse, N. Y.**

M. D. VALENTINE & BRO CO.

FIRE BRICK

CUPOLA LININGS A SPECIALTY.

WOODBRIDGE, N. J.

OUR facilities enable us to carry constantly on hand the largest stock in this country. This assures immediate shipment on receipt of order.

THE
PRESBREY STOVE LINING

Will not clinker and will last longer than any other.

SEND FOR NEW CATALOGUE.

PRESBREY STOVE LINING CO., Taunton, Mass.

AMERICAN SEAL

Elastic Oil Roofing Cement, Stove Putty,
Asbestos, Furnace Cement and Roofing Paint.

WRITE FOR PRICES.

J. L. PERKINS & CO., Western Agents. **241 Lake St., Chicago.**

HANDLE THE BEST.

CHAMPION STOVE CLAY

Is the only brand made of crucible materials, viz.: Imported German Fire Clay and Plumbago from Ceylon.

Dealers are invited to send for circulars.

Packed in neat, attractive, round pasteboard boxes of three sizes: large, medium and small, holding about 10 lbs, 6 lbs. and 2½ lbs., respectively.

ALSO SOLD IN BULK.

Your jobber can furnish the goods.

BRIDGEPORT CRUCIBLE CO.
Bridgeport, Conn.

NICKEL PLATING OUTFITS.

ZUCKER & LEVETT & LOEB CO.
526 TO 530 WEST 25TH ST
NEW YORK, U. S. A.

SEND FOR CATALOGUE OF
NICKEL & ELECTRO-PLATING SUPPLIES & POLISHING MATERIALS.

The Climax Gas Machine and Gas Mixer produces a steady, brilliant, highly satisfactory gas, **free from smoke, which burns through plain non-regulating or Welsbach burners.**

It is a modern, perfected apparatus, warranted satisfactory and guaranteed unsurpassed in any particular. For completeness convenience and simplicity it has no equal Sells to good trade who want the best and most desirable and will not submit to the objection of the old time machine, viz.: smoke and adjustable burners. Send for catalogue.

C. M. KEMP MFG. CO.
BALTIMORE.

THE MEILINK
HOSE COUPLING
FITS ANY SIZE HOSE, 2, 3 OR 4 PLY.

A glance at the illustrations will indicate its superior advantages over any other similar device now on the market. Anyone can attach it instantly. Provides a positively tight joint. Easily taken off or put on. Never loses the washer. Won't tear up the lawn

THE BEST THERE IS.

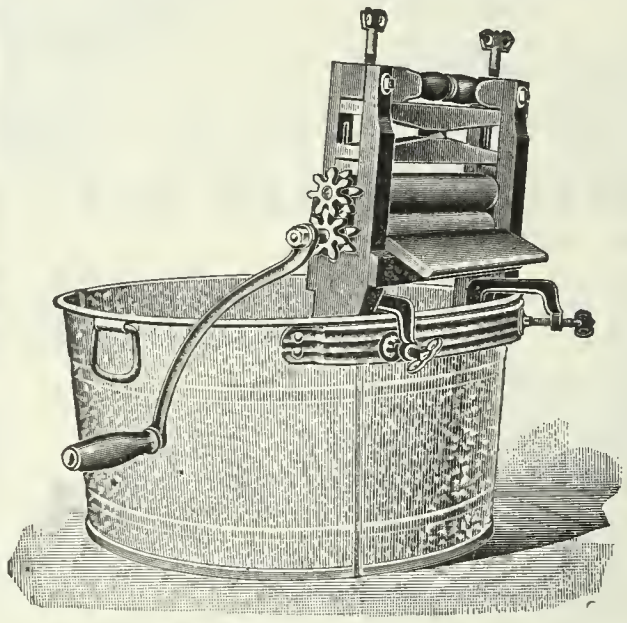
The better you satisfy your trade the better they will satisfy you.

Try a Sample Dozen.

THE
Meilink Mfg. Company,
TOLEDO, O.
Write for Prices and Discounts.

WATER SUPPLY BIG VOLUME LIFTS
L. E. RHODES CO
HARTFORD, CT

"PERFECT" GALVANIZED METAL TUBS.



This is the only sheet metal Tub made upon which a wringer can be used satisfactorily. Your customers do not want a tub that they can't put a wringer on. Satisfy them by selling the **"PERFECT."**

THEY ARE CLEAN, BRIGHT, WELL MADE, WELL GALVANIZED.

Made in Four Sizes.

Patent Applied For.

Sole Manufacturers,
SIDNEY SHEPARD & CO.,
Buffalo, New York City, Chicago, Kansas City, St. Louis, Denver, Seattle, San Francisco.

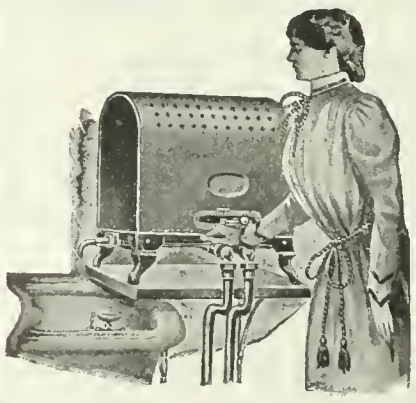
PIONEERS LEADERS

LOW SPEED DYNAMOS. NICKEL ANODES. LACQUERS.

NICKEL PLATING OUTFITS

BUFFS. CYANIDE POTASH. TURKISH EMERY. POLISHING MACHINERY.

THE HANSON & VAN WINKLE CO.
NEWARK CHICAGO NEW YORK



THE VICTOR INSTANTANEOUS WATER HEATER

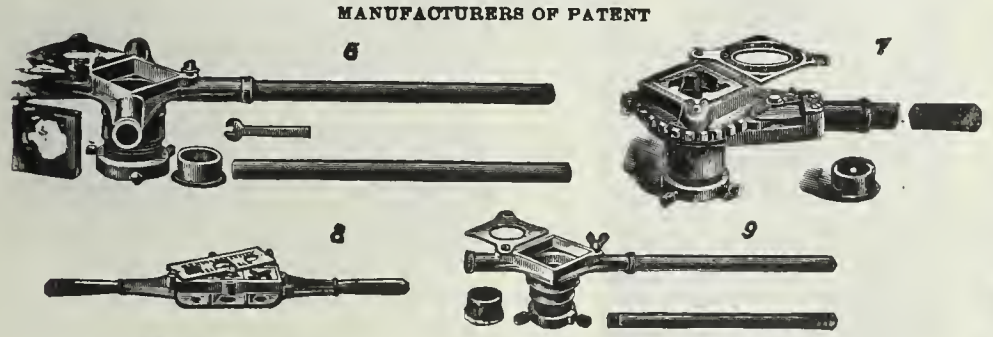
Is the cheapest, the most efficient and the neatest Water Heater made. It occupies but little space and is always ready, furnishing hot water in a few seconds day or night.

Send for Descriptive Circular, Prices, Discounts, Etc.

W. J. ADAM, - - Joliet, Ills.

D. SAUNDERS' SONS.

MANUFACTURERS OF PATENT



STOCKS AND DIES.

Threading pipe ⅛ inch to 6 inch; the larger sizes have CUTTING-OFF attachment. These tools are light, strong and of superior design and finish; also PIPE threading MACHINES ¼ inch to 18 inch hand or power. Send for catalogue to

27 ATHERTON ST., YONKERS, N. Y.

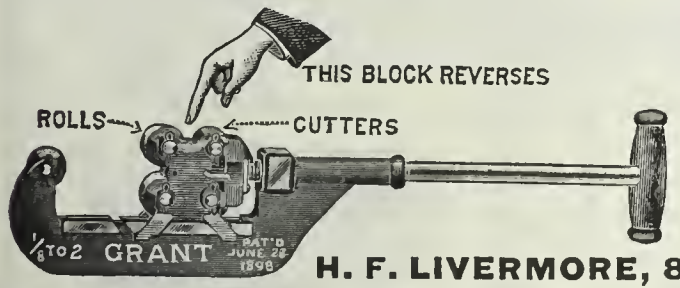
FORBES PATENT DIE STOCK

And one man can, with ease,
Cut off and thread a 12-inch pipe.
Smaller sizes proportionately easy.

Send for Catalogue.

THE CURTIS & CURTIS CO.,
56 Garden Street, BRIDGEPORT, CONN.

THE GRANT CHANGE PIPE CUTTER.



ONE IS ENOUGH TO CARRY.
CUTS FROM ⅛ TO 2 IN.

Cuts with 3 cutter wheels, or with 1 cutter wheel and 2 rolls

Changes Instantly.
Strong, light and simple.
Nothing to get out of order.

H. F. LIVERMORE, 81 Pearl St., Boston.

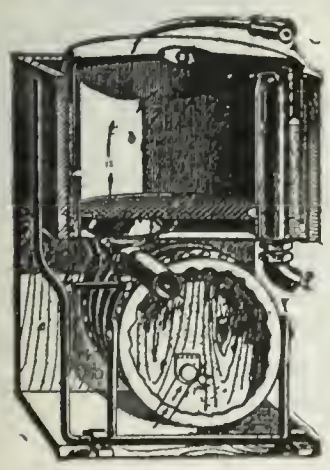
ALWAYS READY—A

GEM

SOLDERING FURNACE.

NO SMOKE,
NO ODOR,
NO NOISE,
UNEXCELLED,
UNEQUALLED,
UNRIVALLED,
SAFE, SURE,
DURABLE.

Made only by
BURGESS SOLDERING F'CE CO.,
COLUMBUS, O.

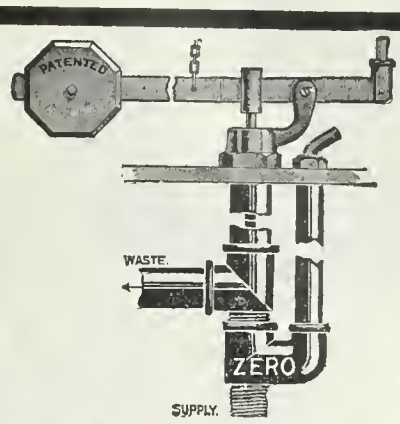


Thomson Smoke Machine

For Testing Plumbing.

WRITE US FOR BOOKLET AND PRICE.

GUNSTER & FORSYTH,
325-327 Penn Ave., Scranton, Pa.



SAVE HALF

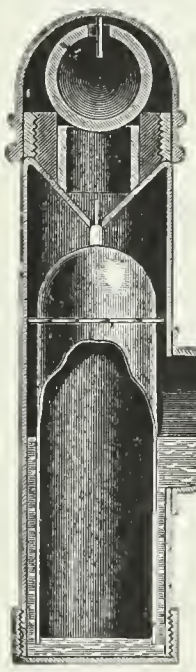
The expense of installing closets by getting

Zero Anti-Freezing Valves.

They can be put in with half the time and half the labor because they do not require a pit or vault.

They are simple and durable in construction—made without screws, springs or pins.

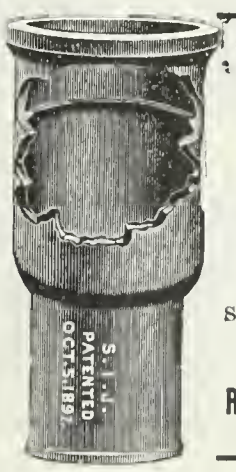
Zero Valve & Brass Mfg. Co.,
296 Seneca St., Buffalo, N. Y.



Morgan's 20th Century Air and Vacuum Valve

Is a positive seal against air returning to the radiator. Check being perpetually balanced in water requires no pressure to lift it. A banked fire, with drafts closed, will maintain heat night and day in mild weather. Will save four times its cost in a single season.

MORGAN & CO.,
40 Dearborn St.,
CHICAGO.



SISSON

INSERTABLE

JOINT

FOR SOIL PIPE.

Sizes, 2 to 6 inches.
Light and Heavy.
Saves labor, expense, and makes a neat job.

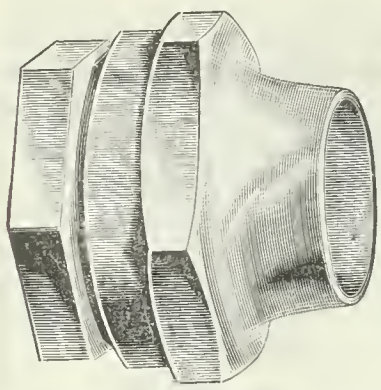
SEND FOR CIRCULAR.

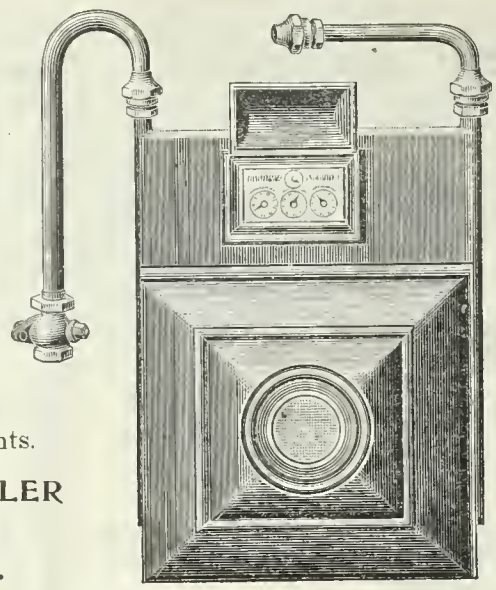
R. Estabrook's Sons,
1st St., Boston, Mass.

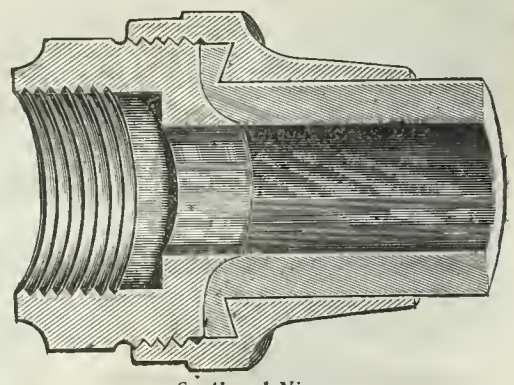
Hand Elevators and Dumbwaiters

made to be sold by the Hardware trade. Can be placed in position by any carpenter. Catalogue free.

ENERGY ELEVATOR CO.,
410 Cherry St., Phila., Pa.







Sectional View.

LEAD TO LEAD PIPE.
A Perfect Substitute for Wiped Joints.

WATER BACK, FAUCET, BOILER COUPLINGS, ETC.

Send for Complete Catalogue.

All Gas Companies that use lead pipe, lead to lead or lead to iron, can save time and money by using the "NOVELTY FITTINGS" in setting their meters and for other purposes.

THE NEW HAVEN NOVELTY MACHINE CO., New Haven, Conn., U. S. A.

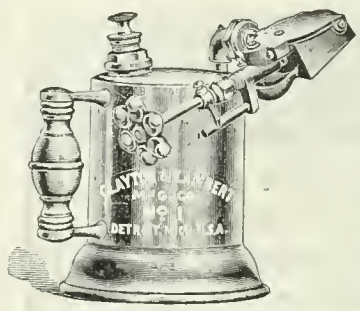
ATTENTION.

WE MANUFACTURE

BALL COCKS,
BOILER FEEDERS,
SHAKING GRATES,
FLOAT VALVES, Etc.

BEST IN USE.

F. W. Foster Mfg. Co.,
12 Portland St., Boston, Mass.
SEND FOR CATALOGUE.



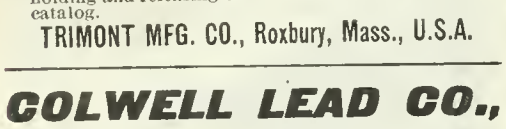
$3.00 Net.

The No. 1 Torch

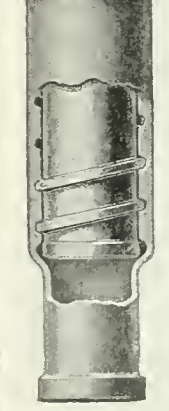
Was made as a companion to the No. 1 Fire Pot, and, like Eve, not a rib, but a burner of the head of the family was taken and used in its make up. Also like Eve, it is a finer piece of work, and much finer materials are used in its construction. The No. 1 is truly the finest torch on the American market, and she points with pride to her numerous daughters We issue a little booklet that tells all about them; it is free and is worth dollars to you.

CLAYTON & LAMBERT MFG. CO., Detroit, Mich.

Trimo Giant



This Chain Pipe Wrench
has interchangeable jaws. Improved method of holding and releasing chain. No locking. Send for catalog.
TRIMONT MFG. CO., Roxbury, Mass., U.S.A.



VANDERMAN'S
Adjustable Fitting
FOR
Soil Pipe Connections.
MODEL FITTING
Sent on Application

SEND FOR PRICE.

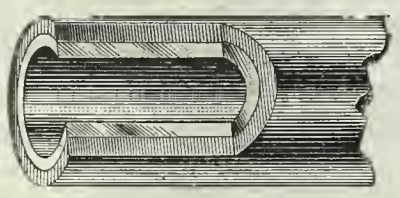
☞ Freight allowed on assorted lots of twelve East of Mississippi River.

Send for "A" Catalogne
Showing large line of
Plumbers' Specialties.

THE VANDERMAN PLUMBING & HEATING CO.,
WILLIMANTIC, CONN., U. S. A.

TIN LINED IRON PIPE.

Avoid, without extra expense, all danger of lead or brass poisoning.



This lining cannot be torn from the pipe.

LAMB & RITCHIE,
Cambridge, Mass., U. S. A.

LEAD LINED IRON PIPE.

COLWELL LEAD CO.,
63 Centre Street, New York.
Manufacturers of
LEAD PIPE, SHEET LEAD, SHOT.
And Sellers of
Everything You Want for Plumbing.

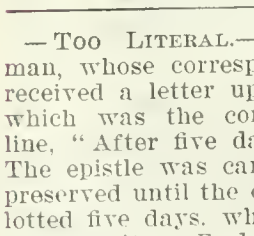
GALVANIZED STEEL and WOOD TANKS.
All sizes and shapes.
J. H. EDWARDS,
59 Park Place, N. Y.

ALWAYS IN STOCK.

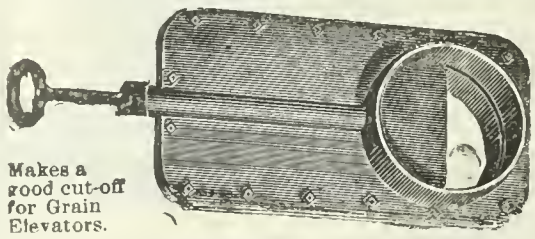
ALL SIZES OF
Galvanized range boilers, expansion tanks and boilers with copper tube coils inside for heating water by steam.

L. O. KOVEN & BROTHER,
Office 50 Cliff St., New York City.

Leather and Rubber
WASHERS,
Machine cut, at less price than can be cut by hand. Send Sample for prices.
I. G. MARSTON & CO,
200 Ruggles St., Boston, Mass.



BOSTON
ADJUSTABLE
BRACKET
For Sinks and Trays.
Can be adjusted both vertically and laterally.
Send for Circular.
JOSEPH H. YOUNG, Boston.



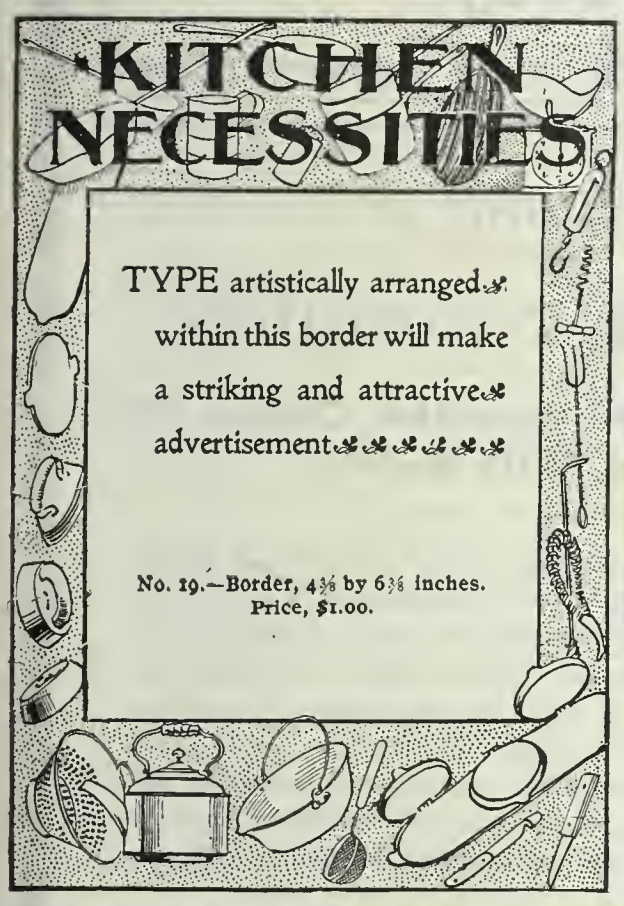
Makes a good cut-off for Grain Elevators.

IMPROVED
WIND-GATE
SEND FOR PRICE-LIST AND DISCOUNT TO
MINER & PECK MFG. CO.,
NEW HAVEN, CONN.

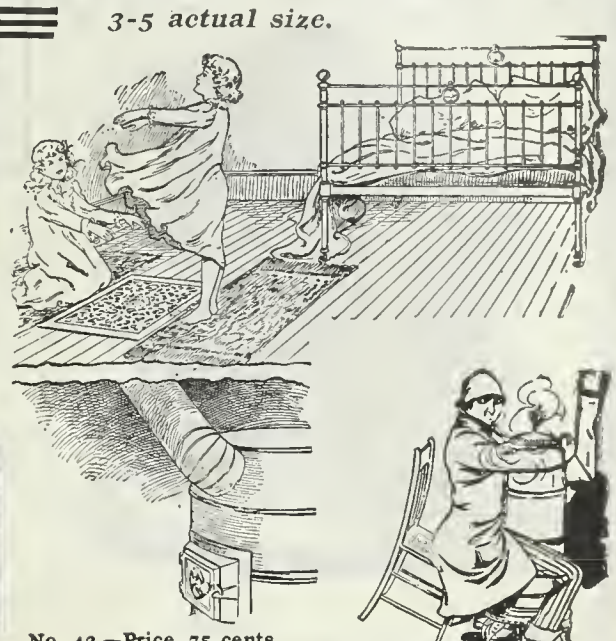
—Too Literal.—A verdant gentleman, whose correspondence is limited, received a letter upon the envelope of which was the conventional business line, "After five days return to ——." The epistle was carefully perused and preserved until the expiration of the allotted five days, when it was returned to the writer.—*Exchange.*

ADVERTISING CUTS

The cuts illustrated on this page will be useful to Furnacemen, Plumbers, Stove Dealers and House Furnishers, for newspaper or circular advertising, letter heads, &c. ***The cuts are shown reduced to 3-5 actual size.***


KITCHEN NECESSITIES
TYPE artistically arranged within this border will make a striking and attractive advertisement
No. 19.—Border, 4⅜ by 6⅜ inches. Price, $1.00.

No. 33.—Price, 50 cents.


No. 42.—Price, 75 cents.

No. 46.—Price, 50 cents.

No. 36.—Price, 50 cents.

No. 47.—Price, 50 cents.

No. 61.—Price, 50 cents.

No. 39.—Price, 50 cents.

No. 48.—Price, 50 cents.

No. 78.—Price, 25 cents.

No. 15.—Price, 50 cents.

No. 24. Price, 50 cents.

No. 41.—Price, 50 cents.

No. 83.—Price, 40 cents.

No. 20.—Price. 50 cents.

No. 30.—Price, 50 cents.

No. 84.—Price, 50 cents.

No. 81.—Price, 40 cents.

No. 29.—Price, 50 cents.

No. 32.—Price, 50 cents.

No. 45.—Price, 50 cents.

No. 44.—Price, 40 cents.

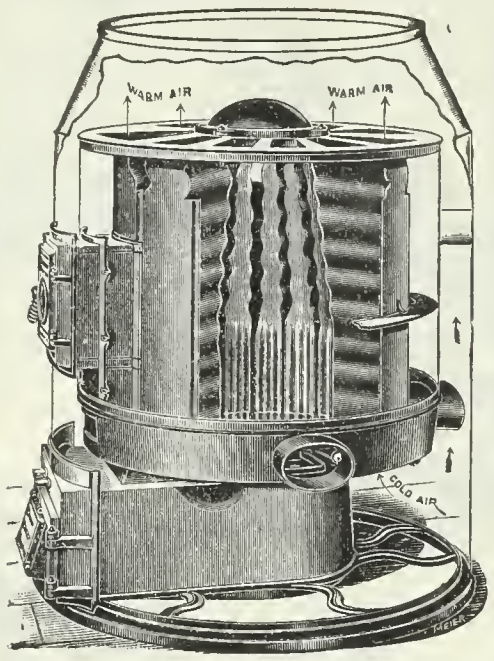
No. 75.—Price, 75 cents.

The Advertising Cuts illustrated above are reproduced 3-5 of the actual sizes.

Cuts Nos 81 and 83 are also sold in larger sizes—viz , No. 81, 4¼ in. wide and 3 in. deep, price 75 cents, and No. 83, 4 in. wide and 2½ in. deep, price 75 cents. We have numerous other cuts for advertising hardware, kitchen and household articles, cutlery, mechanics' tools, &c. These include cuts of various unique designs, together with a line of 128 cuts each giving a small, accurate illustration of a salable article.

A 16-Page illustrated circular and price-list of advertising cuts will be mailed on application.

Sent prepaid by DAVID WILLIAMS COMPANY, 232-238 William Street, N. Y.



KELSEY FURNACE CO., Makers. Syracuse, N. Y.
239 Water St., New York, N. Y.

COOK & VAN EVERA CO.,
38-40 E. Lake St., Chicago, Ill.
Western Selling Agents.

JAMES SMART MFG. CO.,
Brockville, Ont.
Sole Manufacturers : : for Canada.

The Kelsey Warm Air Generator

SEE OUR EXHIBIT AT THE PAN-AMERICAN EXPOSITION.

World's Columbian Exposition, Chicago, 1893, Award, With Medals.

For a new and original, and very efficient form of Warm Air Heater, in which heavy cast iron sections, with corrugated sides, through which is circulated the fresh air, form the fire box and combustion chamber, and are exposed on all sides and throughout their length to the fire and hot gases, thus exposing an exceptionally large surface to the fire.

For the means whereby the warm air may be directed in separate and independent channels, and distributed in such proportions as to insure uniformity of heating in different parts of a building.

Brilliant Enameled Steel Ware

This ware is now manufactured by our factory at Bellaire in the Brown Color only, same having been discontinued in all colors by our Portland, Conn. factory. Particular effort is being made to turn out a highly satisfactory and pleasing article, and all dealers are requested to order a sample lot to be convinced of the merit of this ware.

White and White Enameled Steel Ware

This ware will also be made by our Bellaire Factory only hereafter having been discontinued by the Portland Factory. A large line of hospital goods made in this ware Recommended where sanitary qualities are essential.

National Enameling & Stamping Co.

BRANCH OFFICES New York Baltimore Chicago St. Louis Milwaukee ADDRESS OFFICE NEAREST YOUR LOCATION

THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, August 24, 1901.

DAVID WILLIAMS COMPANY, - - PUBLISHERS.

BUSINESS OFFICES:

NEW YORK.....232-238 William Street.
PHILADELPHIA.....117-119 South Fourth Street.
BOSTON.....33 Mason Building.
PITTSBURGH.....Room 509 Hamilton Building.
CHICAGO.....1205 Fisher Building.
CINCINNATI.....Rooms 22-24 Pickering Building.
ST. LOUIS.....1205 Chemical Building.
CLEVELAND.....312 The Cuyahoga.
LONDON.....Hastings House, Norfolk St., Strand.

Volume LVI.....No. 8
Index to Reading Matter.....Page 66

Keeping Labor Contracts.

The statement of the South Chicago steel workers in justification of their refusal to strike at the demand of the President of the Amalgamated Association forms a refreshing contrast to the action of those other workers who were found ready to violate the contracts they had entered into with their employers. In refutation of the specious argument that the sale of the Illinois Steel Company to the United States Steel Corporation dissolved the contract made with the first named concern, the men say that they have taken legal advice on the matter which satisfies them that Mr. Shaffer's claim is without foundation. Having used this legal argument in support of their position, they turn to the moral aspect of the question and quote statements made by prominent labor leaders, including President Shaffer himself, upholding "the sacredness of labor contracts," and emphasizing the binding character of just such solemn agreements as that of the South Chicago steel workers with the Illinois Steel Company. The principles of union labor, the statement concludes, are as dear to the men who make it as to any men in the country who earn their living by honest toil, but they do not think they "should be expected to violate every rule of business integrity and personal honor for a matter of sentiment." Prophetic vision is not needed to foresee that these Chicago men who refuse to strike because they have a contract with their employers, which they feel in honor bound to observe, will be found in the long run to have done vastly more for the cause of organized labor than Mr. Shaffer and his associates have done.

Pay More Attention to Collections.

While reports from all quarters indicate that liberal shipments of goods are being made to stove dealers, furnacemen, steam fitters and plumbers, it is also apparent that collections are slow. This means that the buyers of goods in these lines are busily attending to the details of their mechanical work, which gives positive results. Such a view, which is too often taken, leads, however, to carelessness and frequently to absolute negligence in attending to other and equally important details of a business. One of the most important of these details is a close scrutiny of all contracts to see that they provide for payments at stated periods for the work done. It is also requisite that the proprietor himself, or his collector, be on hand at such times prepared to exact that clause of the contract as unflinchingly as the customer exacts the perfection of every detail of his work. Similar care must be taken with every sale made where credit is given. It cannot be too strongly impressed upon every employee of the shop that the one thing necessary to success in business is prompt payment. The proprietor must rise above his just pride in good mechanical work and pay attention to the more important work of arranging for the collection of his bills. He can hire good supervisors of his mechanical work, who will require but little overlooking, but he cannot easily hire men to manage his business so that it will pay and be a success. Such men, as a rule, are in business for themselves. If necessary, it is better to take a little less work, in order to secure the time required for arranging for prompt payments, wherever credit is given, by rendering bills punctually with a courteous mention of the agreed upon date of payment. It is a good plan to inclose with the bills a request for examination of items asking that any errors found be reported at once. This will require some study of methods and the cultivation of tact in their application. In fact it is a new trade that must be thoroughly mastered in order to avoid the troubles entailed by overdue bills, disputed accounts, suits and loss of capital, labor and material. Such troubles are sure to follow slipshod, easy going, careless methods and cause constant misunderstanding and ill feeling between the tradesman and his customers. They also lead to a reputation for slow pay and make it difficult to buy at the best prices and to get goods when they are scarce. The remedy for slow collections and bad bills is to arrange for a time of payment and to be on hand at the time. It is extravagance to be obliged to hire a lawyer to make collections.

The Vindication of Vandergrift.

The present crisis has splendidly vindicated the work which George G. McMurtry has done at Vandergrift, Pa., since the days when the Apollo strike first led him into it. Mr. McMurtry, now the president of the American Sheet Steel Company, undismayed by the experience at Pullman and at other places in this country, determined to establish an industrial town at Vandergrift, in connection with the great sheet mill built there by what was then the Apollo Iron & Steel Company. He determined that not alone should close and direct relations be established between the men and the management, based on mutual esteem and a reciprocal recognition of rights, but that the surroundings of the town be absolutely healthy and attractive in other respects. At the old plant at Apollo the Amalgamated Association had been completely defeated. At the new Vandergrift works a nonunion mill was established. The management strove for absolute fair dealing and for the principle of promoting individual men on their merits. Mr. McMurtry studied industrial towns abroad, and, we understand, obtained many valuable hints at Essen. He was exceedingly careful, however, to eliminate even the slightest suspicion of paternalism. The model community which he has established has prospered exceedingly. It is composed almost entirely of native born Americans, 95 per cent. of the men having been taken from the adjoining farming section. It is not a surprise that Mr. McMurtry has been proud of his achievement,

particularly since the enterprise as such has been quite remunerative. His creation of a model industrial town, peopled by men untrammeled by affiliations with labor unions, has, however, now brought to him the crowning vindication. His men have stood by him, and by the principle of frank and cordial relations between employer and employed. The men of Vandergrift have practically unanimously continued to work. The influence of the example in the valley of which it is the fairest gem has been such that it harbors a group of nonunion works which have proved of the greatest importance to the large organization, and have to some extent been the nursery of skilled men for other plants. With such a splendid proof of the value of an industrial town laid out on modern lines, and of a management fostering close relations with the men based on absolutely fair dealing, it is to be hoped that in the future Vandergrift will have the distinction of being only the oldest of a series of similar communities.

The Scarcity of Sheet Metal.

The strike of the steel workers, of course, will bear most heavily upon the men themselves and those dependent upon them; but the American people generally, the consumers, will also have to suffer by reason of the enhanced prices of many kinds of goods. Already the fact that a strike is on and that they will have to help pay for it has been brought home to the public by a sharp advance in the price of all household goods made of sheet iron or steel. By the shutting off of nearly the entire production of tin plates many of the manufacturers of tinware are left short of material with which to fill their orders for goods, and the restriction in the output of sheets has placed some of the makers of enameled and galvanized ware in a similar position. Stocks of these goods in the market are quite limited, as the demand has been unusually brisk all through the present season, and the factories generally were behind in their deliveries before the strike closed up the mills. While there is not likely to be any famine of tinware and enameled ware, for the largest interests in this line make their own tin plates and sheets and are running their factories full with a big output, the cutting off of a portion of the productive capacity at a time when the demand is in excess of the supply is liable to create some scarcity. This scarcity, indeed, is already apparent, and upon it is based the increase in the price of goods, as well as upon the higher prices ruling for the raw material. And prices are likely to mount still higher before they recede, for, whatever may be the duration of the strike, the fact remains that for some time ahead the market will be short of material. Even if the mills should resume operation at an early date, which at this writing appears improbable, months must elapse before the manufacturers could catch up with their orders. The fact that black plate is being imported from Wales to be tinned at the domestic tin plate works may bring a slight relief to the situation, but it will not prevent an increase in the price of tinware, for it is being bought from the Welsh makers at a price considerably above that at which the plates could be made on this side. The outlook for all kinds of sheet metal goods indicates high prices and a short supply for at least the rest of this year.

The meeting of the Michigan Retail Hardware Dealers' Association, held last week in Detroit, is a good example of the beneficial results of such gatherings. There is abundant evidence that the coming together of merchants cultivates the spirit of fraternity and tends to diminish the antagonisms which often characterize the relations of competitors. In the case of the Michigan association substantial good to the trade at large was accomplished in the modifications of laws which were found to work hardship and imperil credits. At such gatherings of broad and enterprising merchants many practical suggestions are brought out which can be applied with advantage to the conduct of business, and those who have attended the meetings go back to their work amply repaid for the time thus expended. At the Detroit convention the reports presented in regard to the progress made in combating the competition of department stores and catalogue houses were encouraging.

Commenting in a recent interview upon the steel workers' strike, Archbishop Ireland of St. Paul gave expression to a fundamental principle of American life when he said that the right of every man to work if he wished to must under no circumstances be interfered with. If there is one thing more than another that is of the essence of true Americanism it is the right of every man to earn a living by any legitimate means available. The public at large will not stand for a coercion which seeks to prevent any one from working who wishes to do so. For this reason the attitude of the Amalgamated Association toward nonunion workers cannot command the sympathy of the great mass of the people. And no strike which does not secure the approval of the public can ever succeed. This is a fact that seems to have been overlooked or ignored by the leaders of the present steel strike.

It is generally supposed that the use of natural gas is a modern custom, but Dr. Day, in *Mining and Metallurgy*, points out that natural gas was used by fire worshipers on the Apsheron peninsula, which runs out into the Caspian Sea, 600 years before the Christian era. It is probable that fire worship originated in that vicinity. It is likely that the gas burned as sacred fires for more than 1000 years, a tribute not only to the zeal of the worshipers, but to the early recognition of natural gas as a constant burning fuel which required no attention.

A special interest attaches to the statistics given in the report of the Building Department of New York City for the second quarter of this year, inasmuch as they reflect to some extent the first results of the workings of the new Tenement House law, which went into effect during the period covered by the report. It is shown that in the three months ended June 30 over 21,000 violations of the building law were reported. Of this number over 7000 buildings were reported for defective construction and materials, and 565 for violations of the provision of the law requiring open courts in place of the old air shafts. More than 6000 buildings were reported for insufficient protection against fire and over 2000 for defective plumbing. This showing would appear to indicate that a vigorous effort is being made to enforce the new law.

Reports from Charleston, S. C., indicate that rapid progress is being made in the work of preparation for the South Carolina Interstate and West Indian Exposition, to be held in that city from December, 1901, to June, 1902. The construction of the buildings is well under way and the grounds are being graded and laid out in a manner that promises especially attractive and artistic surroundings for the forthcoming show. The main building will be a magnificent Cotton Palace, which, together with the Transportation Building and the Machinery Palace, will form a fine group of buildings in the Court of Palaces on the north bank of Lake Juanita.

FURNACE CASINGS AND PIPING.

Ordinarily the furnace season does not open in full activity as early as the stove and range season. Special attention is drawn to this fact this year owing to the condition of the market for sheet iron and tin plate. The supply of these materials is not great, and in view of the strike at the mills it is not probable that it soon can be replenished so that much needed material can be had at the time it is wanted. Failure to secure it means a loss of both profit and prestige, as well as disappointment to good customers. The furnace houses generally have used every effort to secure a stock of both galvanized and black sheet iron for furnace casings and linings in order that their customers may be able to fill their orders, and the houses making furnace pipe and fittings have also made up stock and provided tin plate for making more so as to lend assistance to the furnace contractors.

It is important now that local furnacemeu make a canvass among prospective customers and inform themselves as to how many furnaces they may need and what tin plate or made up fittings are likely to be required, so that they may make the necessary arrangements to secure what they need. It is not enough this year to wait until the weather forces customers to make their wants known. They must be canvassed or trade will be lost. Many orders can be captured and arrangements may be made for the goods early enough to secure them when needed if something is done in the way of judicious advertising and visiting around among those whose apparatus is in poor condition. The furnaceman must not let other branches of his business interfere with his furnace trade, but should be on the alert or his sales will fall off owing to inability to get goods, and loss of sales of course will entail shrinkage of profits.

The Extent of the Mueller Line of Furnaces.

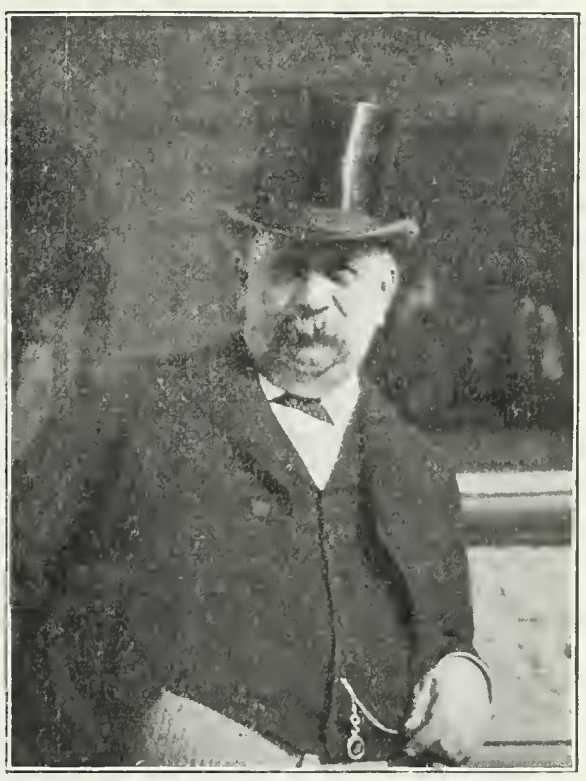
The L. J. Mueller Company, Milwaukee, Wis., are manufacturers of such a variety of furnaces that all requirements of the furnacc heating trade can easily be filled from their line. The constructions which they offer comprise a double radiator all cast furnace, for hard or soft coal, in seven sizes portable and six sizes brick set; a return flue radiator all cast furnace, for soft or hard coal, in four sizes portable and three sizes brick set; a return flue radiator all cast furnace, with air blast attachment, for soft coal, in four sizes portable and three sizes brick set; a tubular steel plate radiator furnace, for hard coal, in three sizes, either portable or brick set; a return flue steel plate radiator furnace, for hard coal, in five sizes portable and four sizes brick set; a return flue steel plate radiator furnace, for wood or coal, in five sizes, portable; a double return flue steel plate radiator furnace, with deeply corrugated fire box, for 4-foot wood, in two sizes, portable or brick set; a double flue steel plate radiator furnace, with plain fire box, for 4-foot wood, in one size, portable or brick set; a return flue steel plate radiator furnace, for 3 or 4 foot wood, in two sizes, portable or brick set; a very large school and church furnace, in one size for hard coal, one size for soft coal and one size for long wood, all brick set.

The company are also manufacturers of a hot water heator, which can be applied to all their coal furnaces and thus convert them into combination hot air and hot water heaters. This heater consists of a bell suspended over the fire, connocted with a coil of wrought pipe which passes rouud the inside of the fire pot, thus securing rapid and positive water circulation under any condition of the fire. The water heater is made in a variety of sizes, which will carry from 125 to 650 square feet of radiator surface. This statement will indicate to the trade quite conclusively the exteusive facilities offered by the company for handling any class of work required in the line of furnace heating.

A CATALOGUE issued by the Stophenson Mfg. Company of 537 Wood street, Pittsburgh, Pa., shows an interesting line of Gas Ranges, which are offered under the name Zenith. The constructive features include movable oven aud burners, oven thermometer, brass water coil, and a plate glass mirror in the lower outside oven shelf, this being intended to show the cook how to regulate the gas under the back oven without the necessity of stooping down. The Ranges are made right and left hand for using natural gas as a fuel aud have water heater attachment. A rather odd construction is the Zenith Gas Furnace, which is said to have a capacity sufficient to heat a hall of ordinary size and two to three rooms. The other goods in the catalogue include the Zenith Gas Laundry Stove and the Zenith two and three burner Hot Plates.

J. Leslie Miller.

J. Leslie Miller, president of the William Miller Range & Furnace Company of Ciucinnati, Ohio, whose portrait is presented herewith, died on August 13 from a stroke of apoplexy at his home at Avondale. He had returned on the previous day from a farm which he owned at Milford, Ohio, and complained of illness, which



J. LESLIE MILLER.

yielded to treatmeut. The seizure which terminated his life came quite suddenly, however, 24 hours later. Mr. Miller was born in West Virginia and was 59 years old at the time of his death. He went to Cincinuati about 40 years ago and secured a position as bookkeeper with the William Miller Range & Furnace Compauy. Later on he was made a partner in the coucern aud on the death of William Miller became the president. He was a veterau of the Civil War and very prominent in the business community of his city. His genial dispositlon made for him mauy friends, by whom he will be greatly missed. A widow and two sons survive him.

Fifty Furnace "Ads."

Furnacemen who use their local papers for advertising to extend their business will find a help in preparing their copy in "Fifty Furnace, Steam and Hot Wator Heater Ads.," issued by H. P. Townley, Terre Haute, Ind. Mr. Townley has used them for his own business and proved their value. The ads. are printed on slips, some with cuts aud some composed entirely of text, and are worded and displayed so as to attract attention and give a good impression of furnace heating, which is what is required to bring the buyer to the store of a furnaceman. They can be used *verbatim* or modified to suit. Mr. Townley published "100 Steel Range Ads." last year, and the demand for those induced the preparation of the series of furnace "ads.," which sells for 50 cents.

The Walker & Pratt Mfg. Company

of 31-35 Union street, Boston, Mass., have issued a leaflet relating to their new Crawford oak stove, which is intended for burning wood or coal. It is of handsome exterior, nickel being rather elaborately employed in its ornamentation. In its construction the fire pot is very deep and heavy, the grates are strong and durable and easily replaced when worn out, and the ash pan is of large size. The manufacturers refer to the fact that there are two styles of coal grates—draw center and triangular. The wood grate, which is ribbed and grooved, may be used by itself or placed over the coal grate. There is ample clinker space for poking and slicing the bottom of the fire, the draft wicket is operated by a screw and closes air tight, being quickly opened to full size for clinkering or shaking the grate. The body of the stove is of heavy steel tightly fitted top and bottom. Accompanying the leaflet is another carrying a half-tone picture representing the company's foundry in summer. They say that during the summer they have been very busy, getting ready for a large fall trade. They have extended their mounting shop, where castings are assorted, inspected and put together into stoves, the extension being 100 x 112 feet in size, and is full already. They have enlarged their nickel plating department, although it was entirely new three years ago. The company state that their pattern shop has been rushed all summer as never before, that their new goods are almost ready, and that in a few days they will have something interesting to show the trade. As sheet steel is scarce and high the manufacturers suggest that Crawford Oaks should be ordered at once.

The Round Oak Year Book for 1901.

We have received a copy of an unusually handsome catalogue just issued by the Estate of P. D. Beckwith, Dowagiac, Mich., manufacturers of Round Oak stoves, ranges and furnaces. This publication is entitled "Round Oak Year Book," the appropriate name which has been selected for the company's annual catalogue. The catalogue is almost square in shape, being 7¼ x 7½ inches. It contains 138 pages. On the front cover is a portrait in colors of the now famous Indian, Doe-Wah-Jack. The cover, by the way, is a striking imitation of birch bark, the back page bearing Indian illustrations. The frontispiece is a fine illustration of the Round Oak stove plant and offices, which gives a good conception of the great extent of the manufacturing operations of the estate.

The place of honor in the catalogue is appropriately given to the Round Oak heating stove, on which the success of this establishment is founded. This stove is shown with and without a hot blast, with and without a magazine, and with a casing which converts it into a room heater for heating very large rooms. All Round Oak stoves are made with a single piece bottom, with extra large ash pit. The feed and draft doors are ground on, and all joints are air tight. A double fire pot is provided for coal, with a cone grate at the bottom, preventing the formation of clinkers. The hot blast draft is formed by an extension of the fire bowl, which also protects the lower end of the sheet iron body. Malleable iron legs, fitted and bolted solidly to the bottom, are used with all these heating stoves to prevent the breakage of legs. If a leg gets bent it is easily straightened. These stoves are made in a full variety of sizes, and are furnished in either plain or decorated finish. A new heater has been brought out, named the Beckwith air tight, intended for either coal or wood, and fitted with a hot blast of the same characater as that used in the Round Oak stoves. This air tight is substantially made, being intended to outlast two or three of the ordinary air tights. It is made in four sizes. The clinkerless coal fixture and the single piece air tight bottom, which are strong points of Round Oak stoves, are specially illustrated.

Illustrations and descriptions of the Round Oak planished steel range occupy 22 pages. This range is made of Wood's planished steel, and is presented to the trade as a high grade specimen of tight fitting, superior material and artistic ornamentation. It is made with four or six holes, is adapted to either coal or wood, is furnished in all the usual styles and is made in seven sizes.

Cast ranges require 38 pages for their proper presentation. The Round Oak cast range is a new and exceptionally handsome range, which has been most carefully designed and is a specimen of the best workmanship. This range is made for coal or wood, with either four or six holes, and in all the usual styles. Other ranges shown are the Round Oak Kitchener, Round Oak Standard and Round Oak Special, all adapted to either coal or wood and furnished in a sufficient variety of sizes.

Cooking stoves form a department of ten pages. Here are shown the Round Oak Standard and the Round Oak, both of which are high class stoves, finely finished and mounted in full Round Oak styles.

The Round Oak furnace has won for itself a reputation for efficiency as a high class heating apparatus. The full line of these furnaces is illustrated in 28 pages. Including the return flue Round Oak furnaces, 12 different sizes are shown. A water heating combination manufactured by this establishment can be attached in any of these sizes except No. 2. The Round Oak furnace has many special points on which the highest intelligence in the manufacture of heating apparatus has been applied, in order to secure the best results in point of economy of fuel and efficiency of heat producing qualities. The furnace department of the catalogue gives full directions for setting furnaces, and a great deal of other valuable information which will be appreciated by practical furnacemen.

The William Resor & Company

of Cincinnati, Ohio, are distributing among their friends in the trade a 16-page pamphlet calling attention to a few of the many Monitor stoves, ranges and heaters which they manufacture. The selection shown is intended to give a good idea of the character of the entire line, which stands to-day on a reputation extending back over a period of 60 years. The statement is made that the Monitor steel range is made in 243 different styles and sizes. The bodies are made of planished or polished steel in four sizes, while the oven openings are 14, 16, 18 and 20 inches wide and 20 inches deep. They are closely riveted by hand with steeple head boiler rivets and are lined with asbestos held in place by another plate of steel, thus practically making a three-ply wall, which is air tight. The grate is of the duplex pattern, and when reversed and the end linings removed, makes a commodious wood fire box on which an extension can be added to take wood 24 inches long. The little pamphlet shows in addition to the Monitor range the Monitor base burner for hard coal, a number of the art series with front sheet flue and offered in three sizes, the Monitor Oak in its new dress for 1901, the Monitor hot blast for coal, also offered in three sizes, and the Peerless Oak.

The Forbes Furnace for 1901.

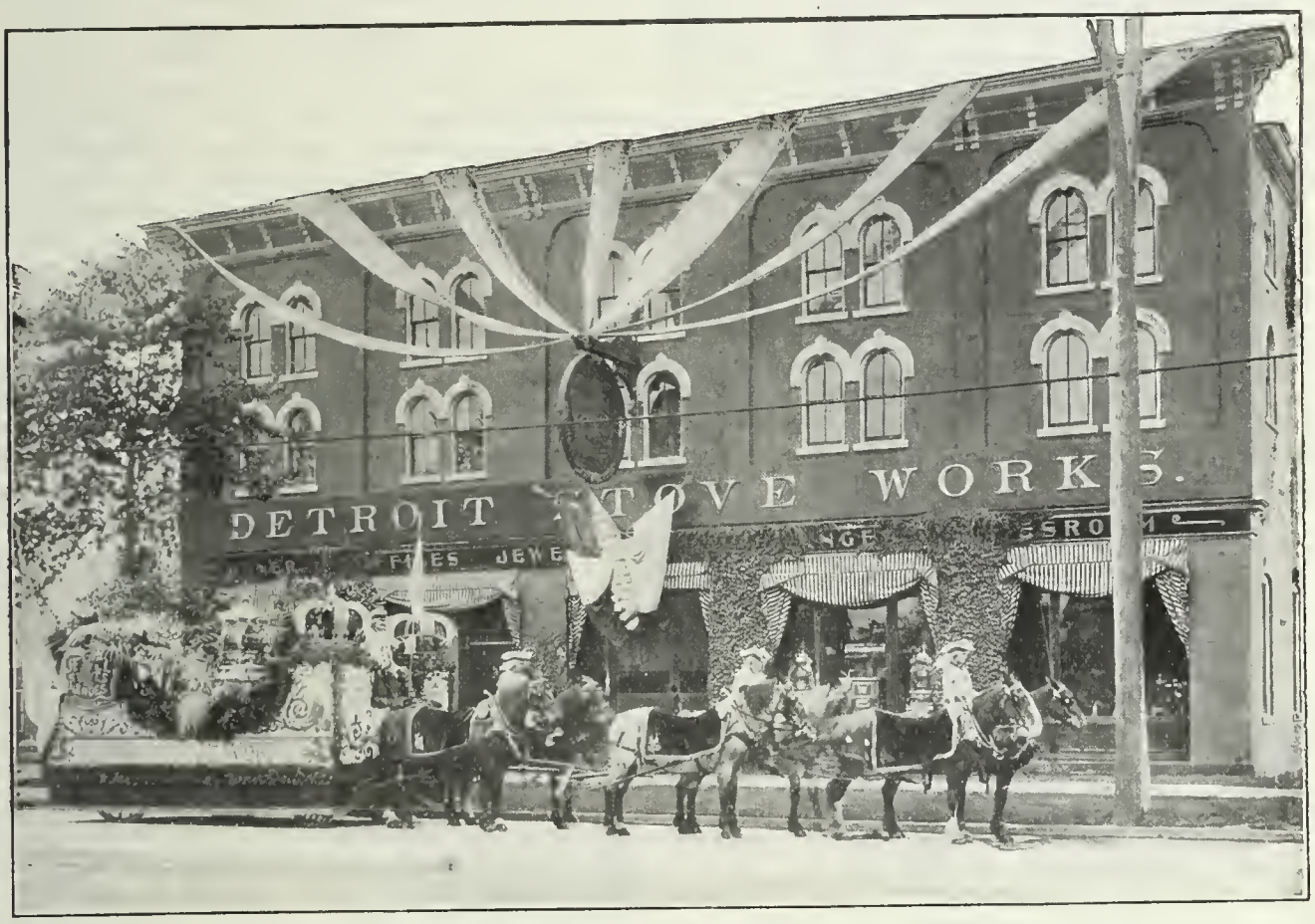
The Tubular Heating & Ventilating Company, 228 Quarry street, Philadelphia, Pa., are distributing an eight-page folder printed in brown devoted to the Forbes improved warm air furnace. Half-tone engravings show the furnace and the ash pit with the grate. The furnace has the usual combustion chamber, and the gases rising from it are made to take a downward course through a tubular radiator, by which construction a large heating surface is presented. A notable improvement has been made in the Forbes furnace for this year which greatly simplifies the method of cleaning the manifolds. The openings in the manifolds have been enlarged for cleaning, but are reduced by suitable caps when the furnace is in use. The smoke pipe is arranged to be easily removed so as to facilitate the cleaning away of any accumulation of soot, dust or ashes at the outlet. Several minor changes have also been made for the greater convenience of the furnaceman in setting the furnace up, and also for its operation. The folder contains some testimonial letters and a table giving full dimensions of the six different sizes in which the furnace is made.

Meeting of Vapor Stove Men.

The Vapor Stove Manufacturers' Association held their fifteenth annual meeting at Little Mountain, Ohio, on Tuesday, the 13th inst. A large representation of the trade was present and the leading topic of discussion was that of prices. The strike in the iron and steel trades is not without its influence upon the cost of producing vapor stoves, owing to the amount of sheet steel employed, and in view of the uncertainty of the outlook it was decided to defer action on prices until October, when it is hoped that matters will be in a more settled shape and manufacturers can proceed intelligently. The selection of officers will not occur until the fall meeting of the association, the place for holding which has not yet been announced.

Detroit's Bicentenary Celebration.

The citizens of Detroit recently celebrated the founding of the city by the French explorer Cadillac, features of the occasion being parades of a most attractive nature. The bicentenary industrial parade occurred on July 25, when the leading manufacturers were represented by floats, many of which were of a most elaborate character. In the accompanying illustration, which is made directly from a photograph taken for the purpose, we show the appearance of the handsomo float used by the Detroit Stove Works on that occasion. The float was drawn by six horses with mounted postillions in costume, while on the float were Jewel stoves, having for the central feature a handsome nickel plated parlor heater.



Float Used by Detroit Stove Works in Bicentenary Parade, July 25, 1901.

Sunshine Stoves and Ranges.

We have received from the Reading Stove Works, Orr, Painter & Co., proprietors, of Reading, Pa., a copy of a very attractive catalogue of 102 pages, illustrating the leading lines of their Sunshine stovos and ranges. Tho pages measure 8¾ x 11¼ inches and afford opportunity for the use of one large cut or several small ones upon a page, together with more or less descriptive matter. The binding is in covers of a unique design, while accompanying tho volume is a leaf, carrying this greeting to the stove trade: "We hand you herewith catalogue of cooking goods made at the Sunshine Stove Shop. You doubtless have our furnace book, "Comfort in Cold Weather," and we shall shortly forward a catalogue of heating stoves. The complete Sunshine line will he represented in the four books, 'Ranges and Cooking Goods,' 'Portable Heating Stoves,' 'Furnaces,' 'Steam and Hot Water Heaters'—everything a dealer can need and the best." The title page carries a list of the officers and directors of the company and the location of their hranches and three foundries. Backing this page is a *fac-simile* of the guarantee which the makers give with every Sunshine stove.

In offering the catalogue the makers refer to the new lines which have been added since the last edition was issued, the most prominent being the Colonial Sunshine and the Mystic Sunshine ranges. The former is referred to by the manufacturers as a "superb combination of the best things in one excellent cooking apparatus. Into its mechanism has been introduced every feature of improvement which experience has demonstrated to be of value to the user." In its external treatment rich effects have been produced by a combination of nickel parts with the black surfaces of the stove. The manufacturers point out that the Othello range still occupies a place of honor in the catalogue, where it is shown in a variety of styles and sizes. The New Sunshine for hard or soft coal or for wood is a heavy, durable construction, having Shear's patent pedal attachment, top oven plate, inlaid with a nonconducting composition, large ash pan, interlocking long center, ventilated oven, heavy covers, high closets, tea shelves, &c. A handsome construction is the Domestic Sunshine, which is referred to as a semiportable range. In design it is referred to as being original, unique and artistic. It is made in a number of styles and sizes and is adapted to meet the most exacting requirements.

The latter part of the catalogue is devoted to a combination line of cooks and ranges, which cannot fail to prove of special interest to the wide awake and enterprising dealer. Tho designs throughout are up to date and embody all the improvements helonging to cooking stoves and ranges. The combination secured through the interchangeable parts and the same character of ornamentation is such as to render the line more than ordinarily attractive to the dealer. These goods include the Household, Peerless, Herald, Linden and Laurel Sunshine ranges, and the Harvest and the Maple Sunshine cook stoves.

A CHICAGO PAPER MAKES IMPORTANT DISCOVERIES.

It is surprising how many things can happen in a trade without the people principally interested knowing anything about it until they are informed by a daily paper. The Chicago *Chronicle*, which is a journal of high standing aud of undoubtedly wide circulation and great influence, gives an illustration of this fact in its issue of the 21st inst. Under the display head in large type of "Stoves Reach High Price" it prints a long article in which the statement is made that stoves have advanced 25 per cent. in price because of the steel strike. This is very important news to stove dealers, if true. Following is the introduction to the article:

Stoves are rising in prices and the man who must make a purchase in that line this fall will be obliged to pay more than he has for some years. This is a direct result of the steel strike. Steel plate ranges, oil heaters and the heating stoves usually known as oak stoves will lead in the high prices on account of the large amount of steel used in their manufacture.

Poor persons especially will be affected by this rise. They are the ones still dependent upon large stoves for cooking and heating purposes. In the fashionable apartment houses, where huge furnaces managed by engineers heat all the rooms, and the little cooking is done on a small gas range, the housekeeper will hardly realize that stoves cost more than heretofore. But among the poor and among those of the poorer middle classes whose homes are heated by coal stoves, while the cooking is done on big ranges, the rise in prices will be keenly felt. Many are known to have put off the time of buying a new stove from season to season until now the old one is so completely out of repair that a purchase is mandatory.

One of the points set forth in this extract is correct, namely, that a large amount of steel is used in the manufacture of steel ranges, oil heaters and oak stoves. The price of steel sheets has advanced very materially because of the strike in the sheet mills and the great scarcity thus caused. If the large manufacturers had not supplied themselves with good stocks of sheets in advance of their requirements, they would now be obliged to pay prices much higher than those prevailing through the spring months, when contracts are usually placed for supplies of this character. Those manufacturers who purchase in small quantities are feeling the scarcity and dearness of sheets and are in a rather unfortunate position to do business in competition with others who laid in large stocks and thus hope to be able to keep themselves supplied through the stove buying season. The probabilities are conceded to be in favor of higher prices on steel ranges and other cooking and heating appliances mainly constructed of steel sheets, but thus far the *Chronicle* is the only authority for the statement that an advance has actually been made.

This writer, however, is not satisfied with endeavoring to scare the trade on account of the strike in the sheet mills, but holds up the apparition of the possibility of a molders' strike. It is true that the machinery molders in Chicago are striking at the present time and that quite a number of foundries have been closed on this account for some weeks. The machinery molders, however, are a distinct class from stove molders and are governed by a totally different set of rules and agreements. The writer in the *Chronicle* may see some reason why the stove molders should become disaffected because of the trouble between the machinery molders and their employers, but no one in the stove trade is able to trace any such relationship. Nevertheless, the point must be admitted that if the stove molders should strike the price of stoves would be advanced on account of the shortage in goods which would then occur. His statement on this subject is as follows:

If the molders' strike in some parts of the country should at this season be extended to the molders in the stove works, it is said by retailers that the price of stoves would reach a record-breaking mark. Many of the firms have contracts which cover their trade for the first demand of the fall. But if the strike spreads the manufacturers would be unable to meet the demand from the retailers for their second supply of goods, which would send the prices soaring. Jobbers of whom the retailers buy have only a small supply of stoves and furnishings in stock, just enough to cover the contracts which they have already made. Prices on these goods will remain the same, but it is thought safe to predict that if a shortage in the market is in sight for the second orders for the season retailers will look far enough ahead to raise the prices on the goods already in stock so as to make them go as far as possible.

The richest part of the whole statement is yet to follow. The extracts previously given are of a general and not a specific character. The author of the article it seems actually found, or says he found, a local dealer who states that prices are 25 per cent. higher than they were a year ago. The statement is as follows:

In endeavoring to make contracts for future goods in the stove line one of the local dealers says that he has found prices 25 per cent. higher than they were a year ago. If the South Chicago men do not go on strike he says Chicago will not suffer so greatly, though the supply would doubtless be limited. If the strikers stay out until next year he declares a high-water mark will be reached.

This local dealer must be a very bright man indeed, as he says that Chicago will not suffer so greatly if the South Chicago men do not go on strike. It happens that the "South Chicago men" to whom he refers are producers of steel billets and rails. How a reduction in the output of the steel billets and rails can affect the supply and price of stoves is a question which can safely be left for solution to the writer on a trade subject in a daily paper.

ODD PLATES.

The annual outing of the employees of Abendroth Brothers at their foundry at Port Chester, N. Y., was held at Edwards' Hill, Rye Beach, on Saturday, August 10. About 200 were in attendance, with Foreman John F. Mills in charge. A brass band furnished music, and games entertained the holiday makers until the clambake and shore dinner was announced. A number of subcommittees assisted in making the third annual outing a day of delight and a happy recollection.

A. C. Barstow of the Barstow Stove Company, Providence, R. I., sailed for Europe last Saturday on the steamer "Potsdam" of the North American Line. R. W. Hillman, manager of the company's New York house, was among those who were at the pier to wish Mr. Barstow a pleasant journey.

The J. W. Paxson Company, Philadelphia, have secured the contract for a complete foundry equipment to be shipped to Cuba.

The Auer Register Company of Toledo, Ohio, have been incorporated with a capital of $30,000. The officers of the company are George Auer, president, and B. E. Acheson, secretary and treasurer. New headquarters have been secured on Smead avenue and Bancroft street, where the concern will occupy a brick structure 40 x 150 feet, two stories in hight, with machine shop 40 x 40 feet and engine and boiler house 25 x 40 feet. As the premises adjoin the L. S. & M. D. Railroad, ample shipping facilities will be available. The Auer Register, although upon the market but for a comparatively brief period, has met with exceptional favor wherever introduced.

It is stated that owing to the rush of orders the Reading Stove Works at Reading, Pa., on August 10 operated their plant on a Saturday for the first time in a long period. We understand that the company are doing a heavy business at present and regard the trade outlook as very favorable.

The Pennsylvania Stove Company of Sharon, Pa., have recently secured the buildings of the bathtub works at Ellwood City and will fit them up for the manufacture of Cast and Wrought Iron Stoves and Ranges. About 200 men will be employed.

Further particulars concerning the fire which on the morning of August 2 visited the works of the Gem City Stove Company, Dayton, Ohio, show that the mounting room and nickel plating department were entirely destroyed, but that their foundries and large four-story warehouse escaped injury, together with their stock of Stoves. They have made arrangements for a temporary mounting room and nickel plating department, and will be able to fill all orders for Clermont Cooking and Heating Stoves promptly on receipt. On account of the machinery used in making their new Steel Range being destroyed by fire they will be unable to fill any orders for it at present. We understand that the company intend putting up new buildings to replace

those destroyed by fire, the plans and specifications being about completed. One building will be 60 x 200 feet in area, four stories and basement in hight, and will be used for mounting purposes. The other structure will be 45 x 100 feet in size, two stories in hight, and will be used for engine room, including nickel plating and cleaning department. When the new buildings are completed the company will be in a position to take care of an increased trade.

How to save fuel in heating a house is a very important question, as most folks know, but the Kelsey Furnace Company of Syracuse, N. Y., are sending through the mails a card which gives the necessary explanation. They state that the only way to heat a large block is by a steam boiler, but that with all other buildings the most economical system is by a Kelsey Warm Air Generator. The company make the strong claim that "the Kelsey has more than double the heating surface in contact with the fire than any other heating apparatus of equal grate surface."

THE BUCKWALTER STOVE COMPANY of Royersford, Pa., are sending out a four-page folder illustrating and describing their Canopy Special Range, which is made with four sizes of oven and seven sizes of top. It is referred to as combining in its make up all the best features of Range construction. The fire box fixtures are heavy to insure durability, and the duplex grate is used, this being removed through the ash pit without disturbing the linings or water front. The top of the Range is extra large and the ash pit is supplied with commodious ash pan. The water front is of large capacity and the tank of the reservoir is made of heavy copper tinned on the inside, although the manufacturers state they can furnish a cast enameled tank when ordered. The company are just placing this Range on the market and are confident it will meet with wide popularity.

THE Stove trade will deeply sympathize with Felix Kahn of the firm of F. & L. Kahn & Bros., Hamilton, Ohio, in the tragic death of his wife, which occurred August 14 at Atlantic City. Mrs. Kahn had been suffering from nervous prostration and while temporarily deranged from illness took her own life.

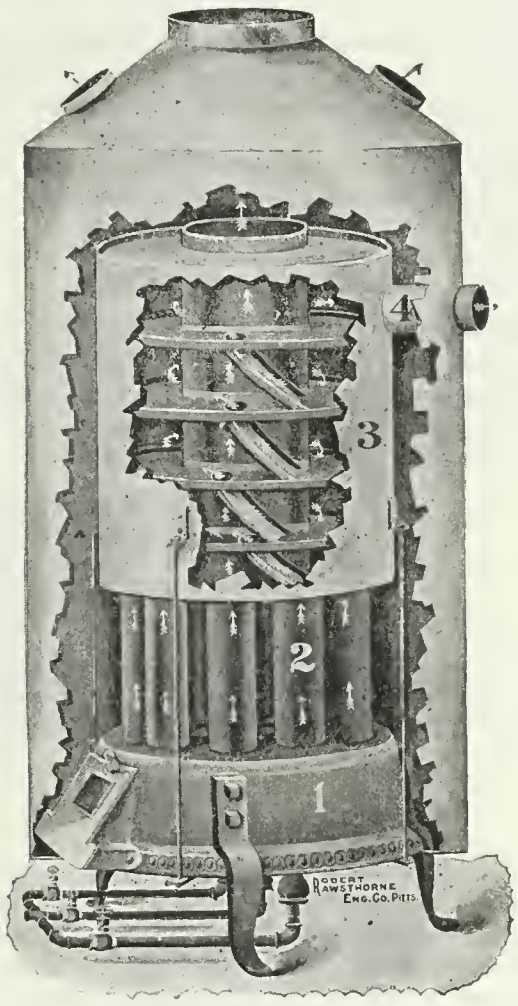
AYLING BROS., manufacturers of the A B Stove Polish, have removed their works and offices from 828 Milwaukee avenue to 14 Haddon avenue, near Milwaukee avenue, Chicago. They have built a fine two-story brick factory especially for their purposes, and have equipped it with the most modern apparatus for turning out their specialties. In their new location the firm will enjoy much greater facilities than at their old factory. The A B Polish is manufactured in liquid and dry form and also as a paste. They also manufacture the Brilliant King Oil Metal Polish for cleaning nickel plate and other metals, as well as glass; the Carbon Diamond Paste Stove Polish and Brunswick Black Stove Pipe Enamel for all iron work. The firm will be pleased to furnish a free sample of their A B Polish to those who address Department B, Ayling Bros., 14 Haddon avenue, Chicago.

THE MAKIN-KELSEY HEATING & MFG. COMPANY, Philadelphia, Pa., are installing for St. Peter's P. E. Church, Germantown, Pa., the Kelsey system of heating and ventilating in the main church and Sunday school, two separate buildings. They are also installing the system in a number of large suburban and city dwellings.

WE have received from the Michigan Stove Company specimens of advertising matter with which they are supplying their agents. One is a sheet of music entitled "The World Contains but One." This is a beautiful ballad, the words being composed by Barney Fagan. Another consists of a sheet of ordinary wrapping paper which bears on it an announcement having the appearance of being executed with an ordinary marking brush. This announcement calls attention to Garland Stoves and Ranges, and is designed to be used in the front of a store for the purpose of attracting shoppers, an object which it will undoubtedly accomplish. The third is a gorgeously colored sign for the use of storekeepers. The sign bears the legend, "If you don't see what you want, ask for it." This sign has also on it the Garland trademark, which effectively assists in the decoration.

A Natural Gas Furnace.

In the accompanying illustration we present a broken view of the Acme hot air furnace for using gas fuel, made by the H. Adler Company, 241 First avenue, Pittsburgh, Pa. It is designed for heating shops, halls, stores and lodge rooms, being specially adapted for such work. It is also adapted for placing in a basement for heating with the usual hot air pipes and is said to have a capacity of from one to six small rooms. The circular fire box is made of cast iron, insuring lasting qualities, and it contains three powerful cast iron burners adapted for burning from 10 to 25 feet of gas and arranged so that one or all may be used as required. The tubes and upper and interior drums are made of heavy sheet steel and expose 4000 square inches of heating surface over which the products of combustion travel more than 18



A Natural Gas Furnace.

feet in their passage to the outlet. The air supply is taken at the bottom and rises through the central drum and between the outer drum and the casing. The best materials and workmanship are used in the construction, and the operation is claimed to be both economical and effective when properly set.

Michigan Retail Hardware Dealers' Association.

At the sixth annual convention of the Michigan Retail Hardware Dealers' Association, held last week in Detroit, the following officers were elected:

President, Henry C. Minnic, Eaton Rapids.
Vice-President, G. W. Bruske, Saginaw.
Secretary, Fred. H. Cozzens, Detroit.
Treasurer, Henry C. Weber, Detroit.
Executive Committee for Two Years: Samuel Winchester, Jackson; Fred. J. Cook, Fowlerville; C. E. Pipp, Otsego; A. Harshaw, Delray; A. J. Scott, Marine City.

Mr. Bock of Battle Creek made an eloquent appeal for the selection of that city as the scene of the next convention, but Detroit was the choice of the majority and was again chosen.

JOHN J. MEEGAN, who has opened a Hardware, House Furnishing and Stove store at 404 Elk street, Buffalo, N. Y., would like catalogues from the trade of goods in his line.

Short Methods in Figures.

BY C. G. AMBLER.

So many articles of Hardware are sold at list and discount that it is desirable to use short methods as much as possible in reckoning the net cost and selling price.

DISCOUNTS.

Every Hardwareman knows that the net figures are found quicker by multiplying the list by the net cost per cent. than by subtracting the amount discounted from the list. For example, if we have 60 and 10 per cent., instead of finding 60 per cent. of the list and subtracting that from the list, then deducting 10 per cent. of the remainder, we would say that a discount of 60 per cent. leaves 40 per cent. of the list, and 10 per cent. more discount reduces it to 36 per cent., which is the net cost per cent.

Thus, if we have Files listed at $13.50 per dozen, the net price at the above discount will be 36 per cent. of $13.50, or $4.86. Another kind, at $14.75 list, would net $5.31. This method is especially helpful in case it is necessary to reckon the prices of a number of articles at the same discount, but listed differently, as when making price-lists or marking goods from the invoice. It is of still greater convenience as a preliminary step in getting the net price of a single article.

DETERMINING THE NET OF A SINGLE ARTICLE.

The net price of a single article listed by the dozen may be found by multiplying the list by one-twelfth of the cost per cent. for a dozen. Of course the rule may be used as well for any fraction of a dozen. If it is required to know the net price of one File at $13.50 per dozen, less 60 and 10, having found that the net cost per dozen is 36 per cent. of the list, it follows that one will be one-twelfth as much, or 3 per cent. of the list, which is 41 cents, taking the nearest whole number, as customary where fractions occur. At 40 and 15 per cent. the result is for a dozen 51 per cent. of the list, or $6.89; a single article 4¼ per cent., or 58 cents.

Sometimes the net per cent. single cost will be readily converted into a more convenient common fraction. Thus, at 10 per cent. discount, the net cost per cent. being 7½, and as the ratio to the number of dimes of the list price is ten times as great, the equivalent will be 75 per cent., or, expressed in a common fraction, three-fourths of the number of dimes per dozen list. This is the same in effect as taking three-fourths of the list and cutting off the right hand figure, but involves less figures. At $13.50 list the result would therefore be three-fourths of 135, which is $1.01. Using the same list in each of the following examples, we find in like manner that with 20 per cent. discount, the net per cent. single cost being 6 2-3, the result in cents is 66 2-3 per cent., or two-thirds of 135, which is 90 cents.

SOME EXAMPLES.

At 25 % discount it is 6¼ % of list, or ⅝ of 135, which is 85.
At 40 % discount it is 5 % of list, or ½ of 135, which is 68.
At 50 and 10 % discount it is 3¾ % of list, or ⅜ of 135, which is 51.
At 60 % discount it is 3 1-3 % of list, or 1-3 of 135, which is 45.
At 70 % discount it is 2½ % of list, or ¼ of 135, which is 34.
At 85 % discount it is 1¼ % of list, or ⅛ of 135, which is 17.

It will be seen that the same common fractions are obtained more quickly by dividing the single cost per cent. by ten. I have introduced the percentage of dimes as an explanation of the principle.

COMBINATION DISCOUNTS.

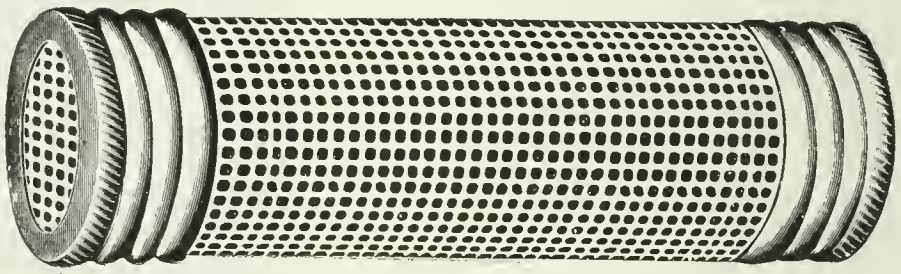
There are a number of combination discounts which are equivalent to the above and, therefore, will work out the same results. For example, 40 per cent. equals 25 and 20, or 20 and 16 2-3 and 10, or 33 1-3 and 10. They will be recognized as they are used, and a complete list of them will be found in "Ladd's Discount Book." By the use of the above method one can, after a little practice, give the net single price almost instantly upon knowing the list and discount, and usually without the aid of a pencil

WHERE REPETITIONS OCCUR.

Again, when there occurs in the discount a repetition, as, for example, of several tens, it is not necessary to make a complete calculation for each, but by either finding the net cost per cent., or, as in some cases it may be more convenient, having found the first amount to be deducted, each succeeding amount will decrease regularly by the rate per cent. last used. Subtract the sum of the amounts thus found, counting as a cent each fraction exceeding ½ cent. Given $4.58, less three 10's and 5 per cent., we have, first subtraction, 46 cents; second, 10 per cent less, or 41 cents; third, 37 cents; fourth (one-half of 37, less 10 per cent.), 17; total, $1.41, which, being deducted from $4.58, leaves $3.17. Another example: $18.63, less 25 and three 10's, gives, first, $4.66; second ($1.86, less 25 per cent.), $1.40; third, $1.26; fourth, $1.14; total, $8.46; remainder, $10.17.

SURFACE MEASURE.

Customers, especially the ladies, when given a price per square foot, frequently ask the price per yard of Wire Cloth. The answer, which may be given readily, will be, for every cent per square foot one-fourth as many cents as there are inches in width, because each inch of width gives one-fourth of a square foot to the yard of length. Thus, 30-inch Wire Cloth at 3 cents per square foot would be three-fourths of 30, or 22½ cents, per linear or running yard. Of course, in reckoning the value of your sale, some fractions of the yard are not convenient. In such cases find the surface measure, but not as some clerks do, by the long and tedious process of finding the number of square inches and reducing that to feet. The use of duodecimals is much shorter. Clerks who have not learned that method will be well repaid if they will spend the little time required in learning it.



The Harrington Tea Percolator.

The Harrington Tea Percolator.

The tea percolator herewith shown is put on the market by O. W. Burritt & Brother, Weedsport, N. Y. It is formed of a perforated nickel plated cylinder 4 inches in length, and about 1 inch in diameter. Perforated screw caps are fitted at each end. In use either cap is unscrewed, tea or coffee put in, the cap replaced, and the percolator put in the pot. The advantage of using the percolator consists in the absence of dregs or grounds from the poured beverage. The device is recommended by the manufacturers for use by housekeepers, fishermen, hunters, campers, picnickers, &c.

WHEELER & EASUM are successors to the Shelf Hardware and Stove business formerly conducted by Wheeler & Thompson, Clarendon, Texas.

THE MILLS SCREW TOP MILK CAN COMPANY of Baltimore, Md., have been incorporated with a capital stock of $5000 by Ezekiel Mills, Jr., Wm. B. Briggs and J. Booker Clift, to manufacture a patented Milk Can.

Rochester Furnace and Sheet Metal Association's Outing.

The annual outing of the Rochester (N. Y.) Furnace, Sheet Metal and Roofers' Association took place on Thursday, August 15. The members to the number of 40 took the picturesque Glen Haven Railroad and a steamer to the Newport House. Unfortunately the day was unfavorable for out of door enjoyment, owing to a persistent rain, but the cheery welcome of Mine Host Sours helped to drive away the gloom induced by the weather conditions. Brother Barrett's birthday, which, somehow, always falls on the picnic day, was first celebrated in royal style, and it was remarked that Mr. Barrett seems to get no older in these succeeding anniversaries. The rest of the morning was pleasantly spent in social intercourse.

Dinner being announced at 1.30, the members and their friends proceeded to do ample justice to the good things provided. After dinner the party enjoyed a number of impromptu talks in response to toasts. A fine programme of sports which had been planned by the committee for the afternoon had to be abandoned owing to the inclement weather. A number of useful and ornamental prizes had been donated by the wholesale houses for the different events. The time to return came all too soon. The intention was to go from Newport via steamer to Sea Breeze and Charlotte, from which place cars would take the party to the city. But owing to a break down of the boat at Sea Breeze the return to the city was made by way of Glen Haven. The sentiment of all on separating was, "If it did rain we had a good time any way," and all felt that they were closer knit together by the outing.

Guessing Amount of Sales.

The Geo. W. Peck Company of Bath, N. Y., celebrated the close of 25 years of business by a guessing contest

The Geo. W. Peck Co.

1875 TWENTY FIVE YEARS OF STEADILY INCREASING TRADE! 1900

SALES 1875. $4,321 16. // SALES 1899 $166,929 60

1875 at Savona.
1881 at Prattsburgh.
1883 at Prattsburgh and Pulteney.
1886 at Prattsburgh, Pulteney and Cohocton.
1888 at Prattsburgh, Pulteney, Cohocton and Bath.
1893 at Prattsburgh, Pulteney, Cohocton, Bath and Bradford.
1899 at Prattsburgh, Cohocton, Bath, Bradford and Hornellsville.
1900 at Prattsburgh, Cohocton, Bath, Bradford, Hornellsville and Dansville.

To Our Friends and Customers

We will celebrate the close of our twenty-five years of business by giving away four prizes, cash value $150.00, as follows: One to the married lady, one to the married man, one to the unmarried lady and one to the unmarried man, who will guess the nearest to our total sales for the twenty-five years from 1875 to Jan. 1st, 1901, in all of our stores as listed above. All guesses must be in not later than December 25th, 1900. No guesses allowed after that time. All have an equal chance, as each store will not be computed until after January 1, 1901, and sales continue for one week after all guesses are in and footed and sealed. Every person is entitled to one guess, and every person balancing their account is entitled to another, and every purchase entitles the person making it to another.

CONTEST COMMENCES OCT 1, 1900.
LIST OF PRIZES OTHER SIDE.

No. 8627 GUESSES _____

No. 8627 GUESSES _____

Announcement of Guessing Contest.

as to the amount of their sales during that period and down to December 31, 1900. Four prizes were offered, the cash value of which was $150. They included a Range for a married lady; a Buggy for a married man; a Sewing Machine for a single lady, and a Bicycle for a single man. The accompanying cut shows in greatly reduced size the form of the circular announcing the guessing contest. Illustrations of the prizes offered were given on the other side.

As will be seen the business was established in 1875 at Savona, since which time the company have opened one store after another, until they now conduct six stores in as many places.

With a view to helping contestants, the circular supplied information as to the sales for the years 1875 and 1899.

CONDITIONS OF CONTEST.

The first person in the different classes that guessed nearest to the total sales for 25 years in all the stores was entitled to the prize in his or her class.

Every person was entitled to one guess; every person balancing their account was entitled to another guess, and every purchase made entitled the person making it to another guess.

RESULT.

The number of guesses made was about 18,000, varying from about $500,000 to $12,000,000. The actual amount of sales for the whole period was $1,748,163.54, the sales for 1900 being $160,787.92.

The contest was a decided success. It created more interest than the company had hoped for, and resulted in a good increase of business at the different stores.

GROWTH OF THE BUSINESS.

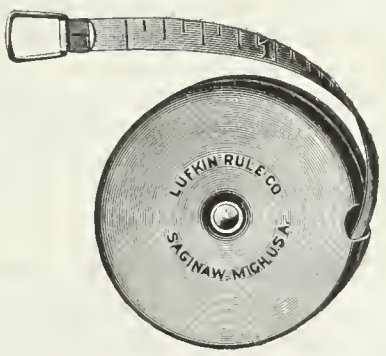
The following table shows the sales each year since the business was established:

Year.	Amount.	Year.	Amount.
1875	$4,321.16	1888	$63,915.49
1876	4,704.56	1889	79,857.69
1877	6,532.22	1890	86,321.98
1878	8,910.20	1891	114,723.90
1879	9,763.46	1892	124,639.89
1880	10,982.23	1893	144,761.17
1881	13,116.42	1894	106,741.92
1882	18,509.13	1895	111,929.00
1883	26,303.58	1896	103,236.19
1884	28,341.12	1897	95,933.49
1885	32,055.47	1898	140,534.43
1886	37,970.14	1899	166,860.62
1887	46,410.16	1900	160,787.92
Total			$1,748,163.54

It is interesting to note that the company's business has grown from 1875 to the present time on the profits without the addition of outside capital. It is estimated also that about $50,000 over and above all expenses and salaries has been drawn out. This is a striking illustration of what can be accomplished by industry and enterprise.

Pocket Linen Tapes.

The Lufkin Rule Company, Saginaw, Mich., and 280 Broadway, New York, have recently added to their extensive line of measuring tapes (which includes also 18 sizes and styles of pocket steel tapes) two series of pocket linen tapes, as here illustrated. One of the peculiarities



Pocket Linen Tape.

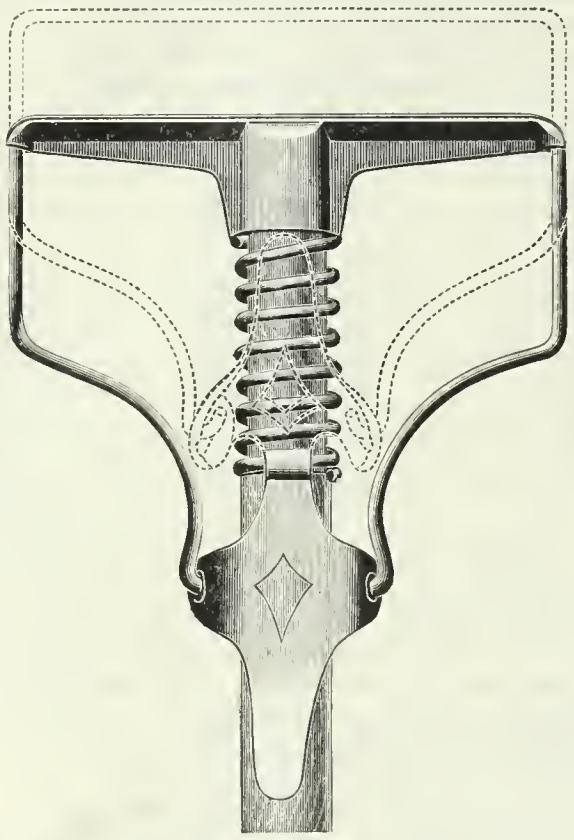
of the goods is the construction of the cases, which are made of polished and nickeled brass with rounded edges, having a spring wind and center stop. They are put together with a screw and can be readily taken apart and reassembled if necessary. The mechanism is entirely new, simple, durable and not likely to get out of order. The tape itself is of pure linen, heavily coated with water proof enamel. One group, with ¼-inch tape, is made in 36, 60 and 72 inch lengths. Another group, with 5-16-inch tape, can be furnished in 36, 60, 72 and 96 inch lengths, both styles being marked on one side in inches and eighths. The sizes of the cases are ⅜ x 1⅜, 1⅝, 1¾ and 2 inches, respectively. They are put up six of a size in a neat pasteboard box.

F. E. Myers & Bro., the well-known manufacturers of Pumps and Hay Tools, Ashland, Ohio, tendered their employees a picnic on the 10th inst. It was the first affair of the kind given by the company, and in view of the pleasure and enjoyment which characterized it, it will doubtless be an annual fixture hereafter. The picnic was held at Chippewa Lake, 17 cars being used to transport the employees and their wives or sweet-

hearts. The company's employees number nearly 400, and altogether about 1000 persons enjoyed the lavish hospitality of the firm.

The Gem Mop Head.

The Arcade Mfg. Company, Freeport, Ill., are bringing out the new mop head which is here illustrated. This device has an ingenious arrangement for firmly



The Gem Mop Head.

holding the cloth. The illustration shows the mop head in position for operation. The dotted lines show the position of the wire frame when holding the mop head opened for the purpose of inserting or removing the cloth. The wire frame is operated by means of a lever made of sheet steel, held in position by a coil spring to which one end of it is attached. This adjustment is operated freely, making the mop head, it is remarked, neat, simple, compact and reliable in action.

Emmert's Universal Vise.

The accompanying cuts show some of the positions in which the Emmert's Universal vise can be used. It is referred to as many vises in one combination. There are 30 fixed positions to the vise, and it can also be

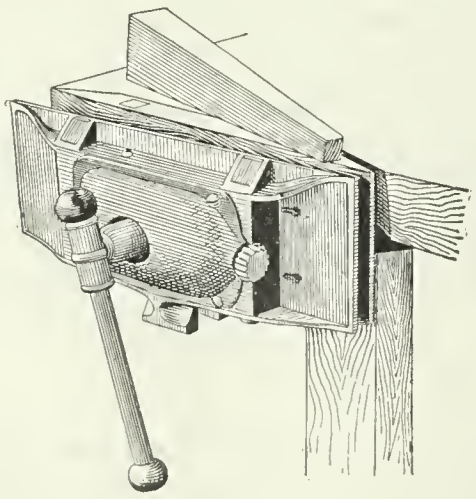


Fig. 1.—Emmert's Universal Vise.

stopped at any point between the fixed positions at which the mechanic wishes to hold his work. It can reach any point in the arc of a circle and can be raised or lowered to suit the convenience and will of the mechanic. The jaws are both right and left and measure 9 x 18 x ½ inches. In Fig. 1 the vise is shown in its normal position on a bench, with the jaw at an angle

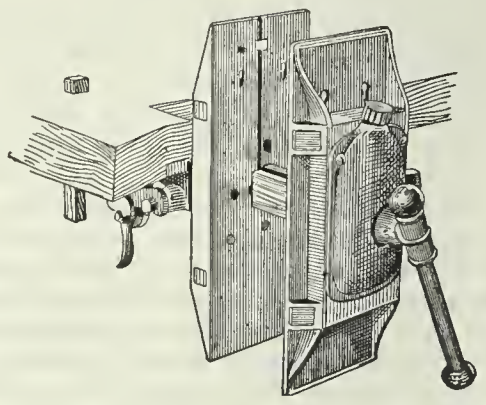


Fig. 2.—Emmert Vises Reversed.

for tapering work. In Fig. 2 the vise is reversed to hold work above the bench. One pair of the small auxiliary jaws are shown in Fig. 3 holding circular work, and in

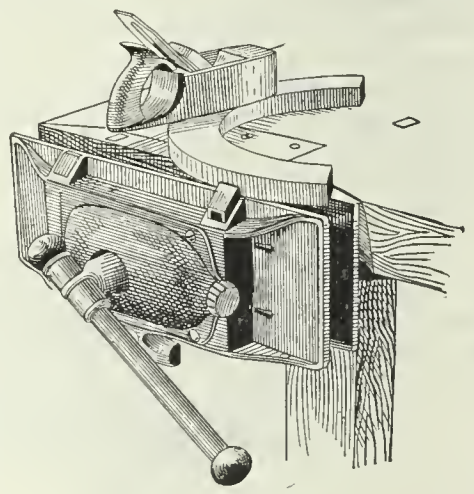


Fig. 3.—Auxiliary Jaws Holding Circular Work.

Flg. 4 two pieces are being held in position to be fastened together. It is explained that when work is once gripped it is not necessary to loosen it, but that the

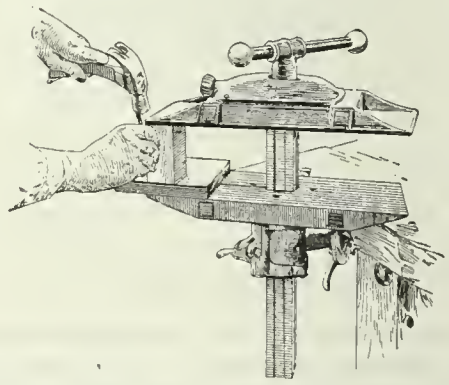


Fig. 4.—Holding Two Pieces in Position.

vise and work together are swung into varlous convenient positions until all of a series of operations have been completed. The vise is manufactured by the Emmert Mfg. Company, Waynesboro, Pa.

THE SLOWE MFG. COMPANY, 909 Walnut street, Philadelphia, Pa., have recently incorporated with a capital of $2500, the officers being Charles P. Slowe, president; Richard J. Warrick, vice-president; Eugene T. Hinson, treasurer, and J. W. Harris, secretary. The general manager is C. P. Slowe. The company manufacture the Slowe Hood and Fume Conveyor for kitchen and laboratory use. The company propose to build a plant in the near future, but at present the article is being manufactured on a commission basis.

A Plumbers' Collection Agency.

W. W. Mathews of the plumbing firm of Mathews & Edwards, Niagara Falls, N. Y., appeared before a recent meeting of the Board of Public Works and asked that body to take some action to assist the licensed plumbers of the city to collect their money when work is done for Individuals in putting in water taps, closets, bathtubs, &c.

In making application for water service the applicant agrees with the city through the Superintendent of the Water Department to engage a licensed plumber to put in the service plpes, &c., and to pay for the same. Mr. Mathews claims, however, that the people will not pay for the plumbing after it is done and he wants the clty to take some action to force them to settle. He stated that in return the plumbers would report all cases of fraud practiced on the Water Department. Mr. Mathews' request being entirely out of the jurisdiction of the board, they could do nothing for him.

The Abner Acetylene Generators.

A new 42-page catalogue in a drab cover, 4½ x 9 inches in size, is being distrlbuted by the Abner Acetylene Gas Company, 32-36 La Salle street, Chicago, Ill., in the interest of their Abner generators. In the first few pages considerable information is given about acetylene gas, its generation and the different types of apparatus for the purpose that will make the catalogue useful to those who take up the sale of this increaslngly popular lighting system. In the Abner generator the carbide is placed in a feed hopper and is automatically fed to the generating chamber as the gas holder rises and falls under the generation and consumption of the gas. Before enterlng the service pipes the gas passes through a purifier and the pressure ls controlled by a regulator. A large body of water is provided in the generating chamber to prevent overheating and to insure a gas of low temperature.

Sectional views of the apparatus are presented and detailed explanation is given of the construction, together with rules for its operatlon. The apparatus seems very slmple and it is claimed that excellent service can be secured when the management is left to the average servant. A long list is given of plants supplying 1000 burners and less in use in various States, as well as pictures of houses, churches and factories in which the Abner lighting system is installed, together with testlmonial letters from owners. The catalogue also shows acetylene gas burners and cooking ranges.

Newark, N. J., Plumbers' Outing.

The Committee of Arrangements for the annual outing of the Master Plumbers' Association of Newark, N. J., have heretofore heard nothing but praises for the admirable manner in which all they have planned has been carried to perfection without hitch or friction of any kind. On Saturday, August 17, the committee, composed of A. Seldon Walker, Ira Budd, F. J. Sturn, R. J. O'Crowley, E. M. Sterling and E. A. Bleythlng, lost some of their past prestige by getting the association and its guests stuck in the mud. They were to enjoy a clambake and shore dinner at New Dorp, Staten Island, but when they reached a point where the appetizing odors had just been wafted to them, thoy found they were "so near and yet so far." Flnally they left the ship, took to the boats and assailed the dinnor with an ardor that soon put all in a happy frame of mind. The outing of 1901 will long be remembered and that, too, with plcasure.

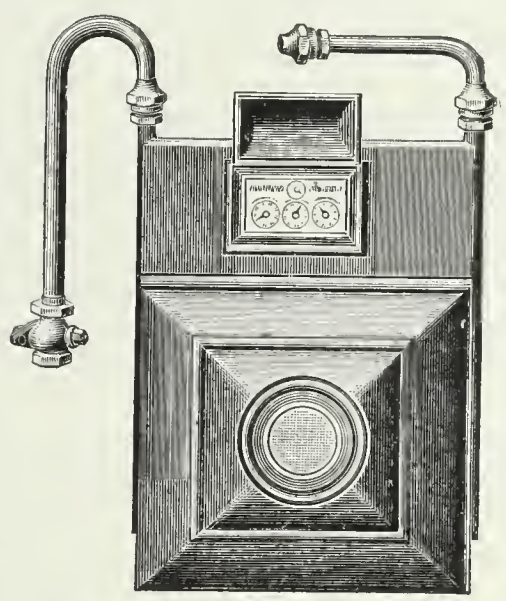
The Gorton Boilers.

The Gorton & Lidgerwood Company, 96 Liberty street, New York, report an increasing trade on the Gorton side feed boilers, particularly those furnished with a cast iron water leg section. These are numbered 34, 34½, 35 and 35½ for steam, and 44, 44½, 45 and 45½ for hot water. By the use of the cast iron water leg the cost of production is reduced and a practically wrought iron boiler with all of the features of strength and a large surface is presented at a price that compares favorably with the price of the all cast iron boilers. The boilers mentioned are of the sizes most in demand by steam fitters.

The Gorton boilers are made also for soft coal. A feature of the construction that has made the boiler popular wherever used is the use of the side feed for replenishing the fire. This combines with the advantages of a surface burning fire of strong radiating power the self feeding convenience of a base burner, so that the fire will run a long time without attention. A large surface of incandescent fuel is supplemented by the combustion of the gases through the grate construction, which admits an ample quantity of air to unite with the gases and consume them. A little pamphlet issued by the house gives complete information regarding these goods.

The Novelty Gas Meter Connections.

The New Haven Novelty Machine Company, New Haven, Conn., who make the Novelty fittings for connecting lead pipe with lead, iron, brass or copper pipe



The Novelty Gas Meter Connections.

without the use of solder and wiped joints, are just putting out a line of fittings specially adapted for the use of gas companies. With this fitting the gas company employec has no need to measure for the pipe and have the joints made in the shop. It is only necessary to take to the place where the gas meter is to be connected a sufficient length of pipe and the die and plug used for preparing the end of the lead pipe for the fitting, also a hammer, wrench and tools for cutting the lead. With this equipment any handy mechanic in a few minutes can prepare the pipe and make a tight joint against gas pressure. It is pointed out that this effects a great saving of time and expense in connecting gas meters and enables customers to be more promptly served. The fittings are adapted for several sizes of pipe and for makIng iron and lead connections.

Calcium Carbide in Germany.

The calclum carbide industry in Germany is suffering from overproduction. Prices have steadily decreased, so that all the factories in Austrla-Hungary, Italy, Switzerland, Scandlnavia and Germany are obliged to stop workIng. The production has amounted to 50,000 tons, of which only 12,000 to 13,000 tons are required for the production of acetylene. A few firms who have binding contracts to deliver calclum carbide are the only ones working. These are the works of the Alumlnum Industrie Gesellschaft in Newhausen, Swltzerland, who have a two years' contract wlth the Prussian Government, who require calcium carbide for producing acetylene gas for the illumination of rallway carriages. It is stated that a number of accidents have lately occurred which tend naturally to hinder the development of acetylene gas.

THE BRITISH INSTITUTION OF HEATING & VENTILATING ENGINEERS.

(From our London Correspondent.)

The summer meeting of the British Institution of Heating and Ventilating Engineers was held at Dublin, Ireland, on Tuesday and Wednesday, July 23 and 24. The proceedings of this institution should be watched by American heating and ventilating engineers, because whatever movement there may be in England toward the American system of domestic heating will, in all probability, be carried out by the members of this body. The special work of heating and ventilating is not as yet strictly delimited over here; for example, the president is at once an ironmonger, gas fitter, plumber and hot water engineer, and it may be said that the membership of the institution includes members who are severally or comprehensively members of all these trades.

There can be no doubt now that the old British bias in favor of the open fire is being dissipated. The business done by the American Radiator Company shows that clearly. If this be so, what is the likely course of domestic heating in England? Those who are best informed on this subject say that without doubt it will take the form of low pressure heating. Its simplicity, easy working and freedom from danger render it the most likely form of heating to appeal to the average Britisher. As it is now evident that there is a marked growth in the popularity of heat radiation by steam, the real difficulty lies in adapting the new system to existing buildings, while a good deal has yet to be said as to the cost. An expert on this point affirms that there are really few houses where a convenient position cannot be obtained for the boiler, either in the basement or in an adjoining building, and that by a little careful planning an installation can generally be fixed without much disturbance to old work.

The law of landlord and tenant has, however, to be observed, and it is important that arrangements shall be made whereby the heating apparatus shall be a tenant's fixture, to be taken away if required at the end of the lease. Thus an indcpendent boiler must be put in instead of one set in brick work. As for price, it seems likely that the low pressure apparatus is more economical than any other system. Quoting the same authority, it is said that most houses can be heated thoroughly in the hall and principal rooms at the cost of a year's rental. It is further stated that under this system the annual saving in the coal bill after dispensing with fires would well pay the interest on the capital outlay—that is, the cost of installation. Thus, in a residence having an annual rental of $350, in which a heating apparatus was fixed, the cost of the upkeep did not exceed an average of $1.25 a week, the price of fuel being then at about $2.50 per ton.

It is recognized, of course, that in this line of work the Americans are the pioneers. On this point my authority says: "Our American neighbors have been looked upon as pioneers in the heating world, and we must admit we have a debt of gratitude owing to them for the advances they have made in the science. It is, however, now well known that they are changing their views considerably, and utilizing water as a heating medium to a far greater extent than formerly, and some of their largest buildings, notably the War Office Buildings at Washington (which has mains of a diameter of 20 inches), are heated by low pressure hot water." On the whole then, it would seem to me that missionary effort on behalf of American methods is more likely to be remunerative to-day than ever before, so far as this country is concerned.

Harking back to the summer meeting of the institution, I quote the following remarks from the presidential address on the methods of heating adopted in France. W. R. Maguire on this point said:

The methods of heating adopted in France and Italy differ much, I find, from the English and American systems. When steam heating is adopted pressure seems to be eliminated by leaving the steam pipes open to the air in a fashion which we would consider wasteful. Examining a steam apparatus in a new hotel, I find it heated from a boiler formed of cast iron tubes or rings, a furnace fed from the top not capable of holding more than a charge of ¼ cwt. of coal, yet able to supply steam to about 2000 feet of radiators in various rooms and passages of the hotel, as closely as one could estimate. English engineers would specify a boiler of at least twice the surface, using twice the fuel, to attain the same result. This boiler, I noticed, was built into a cramped space in a low basement. The only fittings visible were a water gauge and a blow off cock; no safety valve was needed, as any condensed steam escaped freely if pressure exceeded a fixed amount as soon as it had accomplished its circuit through mains and radiators. The whole apparatus was of the plainest and cheapest construction; the radiators were of local castings.

Any of us would feel ashamed of such absolute simplicity, but it accomplished its work economically and satisfactorily, so far as I could ascertain. As I could not get accurate measurements, I merely mention such an apparatus in the preface to my address to suggest a general question as to whether we are not elaborating our systems of heating overmuch, adding valves and patented contrivances too fast and too many, with the best intentions, but perhaps attaining a point in complication which Continental engineers appear to me to be seeking altogether to avoid, with considerable success. If I found the radiator in my room too hot, by closing the single valve which admitted steam at the top it was cooled down in half an hour, and seemed completely under control and noiseless. The French and Italian heating engineer generally adopts, manufactures and fixes a definite type of boilers, radiators, valves, regulators and fittings, and calls the combination his system, which he patents and jealously guards as his own.

The pressure of steam is usually controlled by an expansion feed tank, whose water level is about 6 feet above the water in the boiler, making therefrom about 3 pounds pressure. The condensed water is led back into this tank or direct into boiler, according to the system adopted, which is also provided with an air and steam escape pipe to the open air or ash pit, and an overflow pipe, which serves to operate a damper to check combustion in event of water overheating or steam pressure exceeding its limits. Water is usually supplied by hand feed to boilers, and in the majority of boilers a magazine or store of coal is arranged to feed the furnace for hours without the attention of a special engineer. There is another system from which air vents are omitted and the air in apparatus remains unchanged, moving about with the action of the steam, so as to modify the temperature of radiators, according as they are filled with steam or with a mixture of air and steam. This passing account of the simple forms of low pressure steam heating adopted in France, with apparent success, may have some interest for our members.

If this be so, it would almost seem as if Americans might do something in France and Italy as well as in England. One other remark by the president must conclude this rough survey:

English heating engineers have a powerful object lesson in the growing volume of American trade in our own special business. American boilers, radiators and fittings are too often displacing our English trade union crippled productions. Our institution will, we hope, help to educate public opinion in favor of practical technical training for all youths who may wish to earn their own living. Also we hope to influence the popular mind in favor of securing abundance of fresh air in tenement houses, in schools and factories, and in all buildings where our poorer brethren live and labor without the power to help themselves. We should endeavor to promote judicious legislation to compel proper ventilation in such buildings, and also in hospitals, churches, public buildings and theatres of public resort.

A New Jewel Gas Circulating Water Heater.

George M. Clark & Co., 72 to 76 Lake street, Chicago, are distributing an illustrated circular which calls attention to the special merits of their new Jewel gas circulating water heater. This water heater is designed for use in connection with the ordinary kitchen boiler. It is intended to be connected with the boiler, so that the flow of hot water passes into the top of the boiler and the return is taken to the heater from the bottom. The water in being heated passes through a coil constructed of a number of short tubes, contained in a casing consisting of two thicknesses of sheet steel and two of asbestos with an air space between to prevent the loss of any heat by radiation. The heater is made in two sizes, each of which is 10 inches wide by 10 inches deep, one size being 20 inches high and the other 29 inches high. It will thus be seen that the heater occupies very

small space. The manufacturers state that the large size will give 2 gallons of scalding hot water in five minutes after the burner is lighted aud will then supply a gallon per minute at the same temperature. The smaller size will give 1½ gallons of hot water in five miuutes aud will then supply a gallon per minute. The water heater is furnished as desired for the use of ordiuary illuminating gas, natural gas or gasoline machine gas.

ADVANCED PLUMBING.

The followiug is an extract from a paper read by Wm. Paul Gerhard, C.E., at the annual meeting of the School for Health Officers at Burlington, Vt., on July 10, 1901. It will be interesting to plumbers on account of the views expressed on the use of vent pipes, which by many is considered the especial virtue of the modern system of plumbing:

The advanced system of plumbiug, which up to the present time has been iustalled in only comparatively few cases, is chiefly distinguished from the regular, common or double pipe system by reason of its greater simplicity and compactness. The principles of house drainage remain much the same, and the advance consists chiefly in the simplification, in greater thoroughness of workmanship and in greater safety. I have for years contended, and a long experience has only confirmed my views, that where plumbing fixtures are located withiu a short distance of a well ventilated soil or waste line the special back air pipes can with safety be dispensed with, provided nonsiphoning traps are used under basins, bathtubs and sinks, and provided those types of water closets are used which have a deep water seal.

Some able sanitarians have at various times explained the advantages of the system, and demonstrated that it is safer and more scientific than the complicated double pipe system. In my own practice I use the same by preference wherever I am left untrammeled by the dictates of building or health department regulations.

The advocates of back airing claim that separate vent pipes are necessary: 1, to prevent traps from being forced by siphonage or back pressure, also to prevent the absorption of gases by the water seal; 2, to aerate the traps and every inch of the branch waste pipes.

The first object can be accomplished safely by methods which are less costly and less complicated, and the second is attained at each discharge of a plumbing fixture whenever the same is iu constant use, and constructed so as to be quick emptying and working similar to a flush tauk.

Some of the reasons why the back airing of traps should be given up are as follows:

1. Trap vent pipes increase the liability of the seal of S traps being destroyed by evaporation. While an unvented nonsiphoning trap will hold its seal for two months, a back aired common S trap loses it, according to experiments, in from 4 to 12 days.

2. The system of back venting renders possible the making of dangerous by passes by the blundering of careless or incompetent mechanics.

3. The use of trap vent pipes increases the amount of piping and the number of pipe joints in a house, and in this way the danger of leaks is greatly increased. In any case they cause greater complication without corresponding greater security.

4. Incidentally trap vent pipes increase the cost of plumbing, and the money paid for them to plumbers is spent quite usclessly. A calculatiou undertaken by a careful investigator showed that the amount of piping is increased by 33 per cent. and the number of pipe joints by 66 per cent. The total cost of a plumbing job is increased by at least 10 per cent., and often even more.

5. Back air pipes are liable to stop up at the crown, or upper bend, of the trap from congealed grease or other semisolid matter. They then become iuoperative and hence give a false sense of security. In Cologne, Germany, all back air pipes which an investigating committee had cut open were found choked with either grease or coffee grounds or cobwebs. In St. Paul, Minn., an examination by a plumbing inspector showed that from a total of 23 houses 12 houses had the vent pipes from kitchen siuk traps completely stopped up by congealed grease and particles of vegetable matter or lint from kitchen towels. Of the 11 others only one house had a sink vent pipe which was perfectly clear and unobstructed, aud this was found to be due to the fact that hot water and lye was used once a month iu the pipes. In seven out of the 11 houses a soft, slimy substance was found adhering to the interior of the vent pipes for 2 or 3 inches above the crown of the trap, and in the other three the vents were partially stopped up. The vent from the S trap under the kitchen sink in my own house has been fouud partially stopped up five times in ten years, and would doubtless have become entirely stopped up before the end of this period if I did not have same cleaned once a year. In northern latitudes, where soil and vent pipes above the roof may become closed by frost, traps will readily be siphoned under such conditions.

6. The trap vent pipe, if placed much below the trap seal, does not protect the pipe against self siphonage or loss of seal by momentum. This is a point to which very little attention has been paid.

7. Nonsiphoning traps with more than the ordinary depth of seal are particularly desirable where the mouth of the soil pipe and, through it, the seal of traps is exposed to the action of boisterous winds, as, for instance, near the top of buildings, the winds causing such an agitation in the trap water as to make the ordinary S trap lose its seal by degrees.

Mr. Putnam, a well-kuown architect of Boston, who has given a great deal of attention to sanitary drainage, calls the trap vent law "oue of the most unfortunate and burdensome building laws ever inflicted upon the people, and an imposition upon the public."

The late Colonel Waring stated that in his judgment "the separate ventilation of traps, where the main soil pipe is at least 4 inches in diameter and open at top and bottom, is unnecessary. . . . Continued experience and observation tend more and more to confirm the opinion that the back venting of traps, aside from its great cost, does more harm than good—that is to say, that a trap is more likely to lose its seal if it is back vented than if it is not."

An English expert on drainage called "a diagram of house plumbiug, protected by ventilation pipes as prescribed by most American authorities, a bewildering nightmare of complicated ingenuity," to which statement many of you will doubtless heartily assent. [The lecturer here again referred to the diagram illustrating a house drainage system with back air pipes.]

The fact is, S traps with vents are perfectly safe only if the vent pipes are of sufficient area; if they are uot of too great length; if there are no sudden bends and not too many of them; if they are free and unobstructed, and if their fixture is used every day. The conclusion is therefore inevitable that, as ordinarily arranged, veut pipes are "useless complications."

I wish that time would permit me to make a more elaborate comparison between the two methods, in order to impress upon you the important fact that the improved and simplified system is far superior to the one commonly required by rules and regulations. [Here the lecturer explained a wall diagram showing the advanced system of plumbing.] That the present tendency in plumbing work is toward an undue complication of the work no one can deny, and it would seem to me that this is a particularly fit occasion, by recalliug the superiority of the simpler system, to make a plea for the revision of municipal plumbing regulations. To the health officers of those towns or cities which are about to make plumbiug regulations I suggest that the better way is to make it at least optional with the architect or owner of a building whether he will choose the common, or regular, system with double piping, and incur an unnecessary expense, or use the advanced, improved, simplified and safer method.

I am more than ever convinced that "the one-pipe system," as I have sometimes called it, is the coming system, and that within the next few years even the rules and regulations of our larger cities will be amended accordingly. In my judgment a plumbing regulation requiring the use of traps with antisiphoning properties and with a considerable depth of seal would tend to secure much safer and better work than the majority of the present rules. For the thriving rural communities of your own State I can, without the slightest hesitation, advise the adoption of the advanced plumbing system on account of its greater simplicity, safety and economy.

New York Master Plumbers' Outing.

We are indebted to T. J. Tuomey, chairman, for an invitation, with complimentary ticket, to the grand aunual outing of the Association of Master Plumbers of the city of New York (Manhattan Branch), which will be held Wednesday, August 28, at Crocheron's Hotel and grounds, Bayside, L. I. The train leaves Thirty-fourth street, East River, at 8 a.m. The other members of the committee besides Chairman Tuomey are T. F. Gaynor, I. O. Shumway, E. J. Brady, Joseph O'Brien and John Renehan, treasurer.

Manson W. Johnson, Indianapolis, Ind., has the contract for heating the building of the Grand Lodge of the Knights of Pythias in that city.

New York City Notes.

President A. H. Brown and Vice-President B. F. Donohoe of Manhattan Branch spent the best part of the week in Buffalo attending the session of the State Executive Committee. It is needless to say that while there they took in the sights of the Pan-American Exposition.

* * *

Among the busy plumbers are Griffin & Seddon of West Forty-fourth street, who have a number of good jobs on hand, both new and overhauling, notable among which is the residence of ex-President Grover Cleveland at Princeton, N. J.; a country residence for one of the Vanderbilts at Rhinebeck, N. Y., and the Wayside Home on East Twentieth street.

* * *

Mr. Seddon of the above named firm had a narrow escape from drowning at Rockaway Beach last Sunday. He was caught in an undertow and carried out to sea, but was assisted to shore by his bride of a few weeks, who saw that he was in difficulty and swam to his assistance.

* * *

Trade in the past few weeks has fallen off considerably from what it has been for some weeks past.

* * *

Wm. Lyman, who was one of the best known plumbers in the city a few years ago but left to go into the building business, has returned to his original trade and formed a partnership with Owen Costello at 2246 Fifth avenue. The firm are at present quite busy, one of their largest jobs being an apartment house on East Fifty-ninth street, with an ell running into Park avenue.

Heating and Plumbing Notes.

At the Florida State convention of Master Plumbers, held at Jacksonville, Tuesday, August 13, the election of officers for the ensuing year resulted as follows: President, H. W. Stafford of Jacksonville; first vice-president, George Fernald of Sanford; second vice-president, H. Bomford of Tampa; third vice-president, C. F. Hamblin of St. Augustine; fourth vice-president, H. H. Wickie of Pensacola; secretary, M. R. Hooker of Jacksonville, and treasurer, A. G. Johnson of Jacksonville.

The Glamorgan Pipe & Foundry Company of Lynchburg, Va., manufacturers of Cast Iron Gas and Water Pipe, &c., have leased the works of the Radford Pipe & Foundry Company at Radford, Va., which has a capacity of from 125 to 150 tons a day.

Proposals will be received at the office of W. C. Jones, chairman of the Special Building Committee of the McLean County Board of Supervisors, Bloomington, Ill., until September 7, for all the labor, materials and apparatus required in the steam heating, ventilating and heat regulation of the McLean County Court House, now being erected at Bloomington, in accordance with drawings and specifications prepared by Reeves & Baillie, architects, 600 Y. M. C. A. Building, Peoria, Ill.

George W. Page, who is said to have been the pioneer plumber of Lacrosse, Wis., died there recently at the age of 84 years.

The Stephenson Mfg. Company, 537 Wood street, Pittsburgh, Pa., are distributing a very attractive catalogue devoted to Stephenson's Automatic Instantaneous Water Heater for Gas. The Heater is designed to be connected with the water and gas service pipes in a building and to supply all the fixtures in the building with hot water. A special burner and valve are provided. A coil of 100 feet of copper pipe is exposed to the gas flame and heats the water as it flows through, so as to make it hot for use on its arrival at any faucet.

Green & Logan, Bridgeport, Conn., are roughing in the plumbing in the new preparatory school building which D. C. Mills is building at Salisbury. There will be 78 fixtures in all and the work is to be completed, according to the contract, by October 15. They also have the contract for the tin roofing and plumbing of W. M. Terry & Co.'s new block in Bridgeport.

The Atlas Wire Works, Springfield, Mass., have recently closed a contract through the Fuller & Warren Warming & Ventilating Company of Boston, Mass., to equip the High School Building in Hudson, Mass., with a large number of Vent Screens.

The journeymen plumbers of Columbia, S. C., recently struck against the employment of colored men to do plumbing, gas and steam fitting.

The Elm City Engineering Company of New Haven, Conn., were lately incorporated to carry on an electrical and mechanical engineering business, with a capital stock of $2500, which is fully paid in. N. B. Hoyt is president and treasurer of the company; J. H. Martin, manager, and J. E. Post, superintendent. Their office and factory is located at 65 Orange street, where they employ a force of experienced men. They have been busy filling contracts for placing electrical machinery for ceiling fans, ventilating apparatus, &c.

MacBrayen & Mahn, New Haven, Conn., have the contract to install a large steam heating system in the house of Frank H. Kimberly on Townsend avenue, known as "Fernhurst." They also have the contract to heat seven greenhouses for the same party.

Hoy & Co., Minneapolis, Minn., secured the contract for the plumbing and gas fitting work in the new Physics Building at the Minnesota State University.

Rothacher & Townsend, Minneapolis, Minn., have contracts for plumbing in two Curtis houses on Chicago avenue and in the new Turkish baths on Sixth avenue, that city; also in the school building at Sacred Heart, Minn.

The new house drainage system for Savannah, Ga., has been completed. It is 49 miles in length and cost the city $264,417.50. Up to date 1000 house connections have been made. The work was begun in 1897.

The Board of Education of Cleveland, Ohio, will receive, until September 9, bids for heating, ventilating, plumbing and gas fitting the Rose School building, also for the galvanized iron and tin work.

The F. G. Heald Hardware Company, Skowhegan, Maine, have the contract for plumbing the new school house at Madison. The heating contract was awarded to N. S. Steward, who will use the Magee Heaters, made by the Magee Furnace Company of Boston.

The city of Philadelphia, Pa., has taken title to the property of the Tenth Baptist Church, on Eighth street, above Green, and will tear down the present brick edifice and erect a public bath house upon the site.

F. W. Bryan & Co. of Canandaigua, N. Y., have been given the contract for erecting the new ventilating plant in the local Court House, to cost $2175.

A contract for a heating system for the Wisler Memorial Baptist Home, Chalfonte, Pa., has been awarded to the J. Frank Boyer Heating & Plumbing Company, Norristown, Pa.

A boom in plumbing in Denver, Col., has caused application for the unprecedented number of 84 plumbing permits to be made to the chief plumbing inspector in one week.

Henry Ashley Bryant died at his residence in Williamsburg, Brooklyn, N. Y., on August 17, of congestion of the brain, aged 63 years. He was in the plumbing business on Atlantic avenue. Mr. Bryant was a member of the Baptist Church. A wife and one son survive him.

The Hitchcock Supply Company, Springfield, Mass., inform us that they have purchased the good will and stock of the American Supply Company of their city, thereby increasing their business and facilities. The concern they have succeeded will no longer do business in Springfield.

The plumbing contract, including the drainage, for the factory of the Atlas Tack Company at Fairhaven, Mass., has been secured by the J. Wadsworth Company of Taunton. It will require nearly 4000 feet of Cast Iron Pipe. The company's bid was about $3200.

They have recently finished plumbing the new high school building at Taunton.

WORK has been begun on the construction of a new $30,000 hot water plant at Van Wert, Ohio, under the superintendence of E. F. McGlynn of Delaware, Ohio.

THE PENN YAN STEAM HEATING COMPANY, Penn Yan, N. Y., have notified their customers that on account of the high price of coal they will advance rates 20 per cent. September 1.

IN keeping with the name Royal, given to their Heaters, is the souvenir pencil that the Hart & Crouse Company, Utica, N. Y., are sending to their friends in the steam fitting trade, as a reminder that this is the season to use the Royal line of Heating Apparatus. The company's address and the words "Royal Heaters" are engraved on two sides of a handsome square nickel plated writing pencil and another side is graduated as a standard 6-inch rule. At one end is the screw for adjusting the leads, which are held by a clamp. The leads are intended to be worn out in writing orders for Heaters, but for Royal Heaters only.

HARRY FOX, Watertown, Conn., who carried on the manufacture of Faucets after his father's death, sold out the business to F. P. Welton of Waterbury some time ago. Since Mr. Welton has taken possession the business has shown a marked increase.

A MOVEMENT is being made in Gardner, Mass., to have the Plumbing Inspector of Fitchburg act for that town also, as there is not enough work to warrant the expense of a separate official.

THE PHILADELPHIA STEAM HEATING COMPANY, Philadelphia, Pa., have contracts to install heating plants in a number of buildings in that city, involving an outlay of $20,280. They include a plant to cost $3900 in the school of St. Agatha's Roman Catholic Church; one to cost $800 in the house of W. L. McLean, Queen lane, and one to cost $1700 in the store of Mitchell Fletcher & Co.

C. J. MCPHERSON of Portland, Ore., was a visitor at the office of *The Metal Worker* this week. He has been spending some time in the East among the makers of heating goods. His father, W. G. McPherson, handles the American Boilers made by the Pierce, Butler & Pierce Mfg. Company, Syracuse, N. Y., and the Perfect Furnaces and Ranges made by Richardson & Boynton Company, New York.

THE NATIONAL REGULATOR COMPANY, 204 Dearborn street, Chicago, are distributing a 24-page catalogue in a drab cover bearing a design in red and black. It is devoted to the National Automatic Temperature Regulator, which is designed to control the draft of all kinds of heating apparatus so as to maintain an even temperature throughout a building, or it may be attached to one Radiator or to the gas supply to a natural gas apparatus. Testimonials are presented that report excellent results.

THE uses to which Buffalo Volume Blowers and Exhausters are put are described in an interesting manner in a 20-page *brochure* which has been issued by the Buffalo Forge Company of Buffalo, N. Y. Illustrations as well as tables of dimensions and prices of the Buffalo "B" Volume Blowers and Exhausters are presented. The illustrations show the various adaptations of these Blowers, giving both the engine and motor electric connected types. A chapter also deals with Blast Gates, Bearings and Countershafts. The booklet has a neat and attractive appearance and contains much information for one who is looking into the matter dwelt on.

MALLEABLE IRON FITTINGS COMPANY, Branford, Conn., have just completed a new building, which they will use for japanning and coppering. This feature, in connection with their galvanizing and tinning business, enables them to supply Gray and Malleable Iron Castings, finished in either way. The upper floor of the new building, 283 x 58 feet, which was completed a few months ago, has been utilized as a machine shop and is running full time, with plenty of orders on Hardware Specialties and Malleable Iron Fittings, both Galvanized and Black. W. T. Flanders, author of "Galvanizing and Tinning," published by the David Williams Company, has been engaged to take charge of the galvanizing and tinning department, and to superintend the erection of new galvanizing and tinning plants, which business will be made a special feature.

THE following Board of Directors has been chosen for the National Tube Company: F. J. Hearne, W. H. Latshaw, J. D. Culbertson, E. C. Converse, C. M. Schwab, E. H. Gary, William Nelson Cromwell, W. J. Curtis, Charles Steele, A. S. Matheson and William B. Schiller. The board organized by electing the following officers: President, F. J. Hearne; first vice-president, W. B. Schiller; second vice-president, W. H. Latshaw; third vice-president, J. D. Culbertson; fourth vice-president, A. S. Matheson; secretary and treasurer, J. D. Culbertson. The regular quarterly dividend of 1¾ per cent. on the preferred stock has been declared, payable October 1. Books close September 23 and reopen October 1.

THE contract for heating with steam St. Austin's Military School, at Salisbury, Conn., has been awarded to M. Carney of Philmont, N. Y. Mr. Carney has also received the contracts for the heating and plumbing of St. John's Reform Church, at Chatham, N. Y., and the heating of the residence of E. Palmer of the same place.

THE heating contractor who visits the Pan-American Exposition at Buffalo will have a fine opportunity to get a comprehensive idea of Fans for heating and ventilating work at the exhibit of the Buffalo Forge Company of Buffalo, in the Machinery and Transportation Building. It is not only an imposing display with its pyramid of Fans, but Fans of large and small sizes can be compared and a better idea of them may be gained than from a catalogue. The Fans are shown connected with engines and motors just as they are used, some being in operation. Pressure Blowers for foundry cupolas and smaller ones for Blacksmiths' Forges are displayed, also complete Forges with Blowers. The exhibit covers a large space and to the practical man is an instructive one. The apparatus for washing and filtering air will be of special interest to many contractors.

CAPTAIN R. L. BROWN, Quartermaster at Sheridan, Wyoming, will receive bids until September 11 for plumbing, heating and electric wiring a barracks building at Fort Mackenzie, Wyoming.

THE F. W. BRYAN HARDWARE COMPANY, Shortsville, N. Y., bid $2175 and secured the contract for the ventilating plant for the Court House in that town.

CHARLES F. HAUSS, a member of the American Society of Heating and Ventilating Engineers, was in attendance at a four days' meeting of the German Society of Heating and Ventilating Engineers at Mannheim on August 13-16.

New Firms and Changes.

CHARLES A. JONES has bought the stand of Peacock Brothers, corner Eleventh street and First avenue, Detroit, Mich., and has opened a plumbing establishment there.

THE HOME STEAM HEATING COMPANY of Chicago have been incorporated, with a capital stock of $2500, by John B. Synnestvedt, Emil F. Lindrooth and Rose B. Barden.

L. A. MCGUIGAN has opened a plumbing and steam fitting shop at Davis, W. Va., and would like to get catalogues of goods in his line from the trade.

THE DRAPER MFG. COMPANY have been organized at Port Huron, Mich., to take over the business of T. Draper's Sons, manufacturers of Valve Facing Tools. The capital stock of the company is $25,000. H. Corey of Petrolea, Ont., is president; A. D. Bennett, manager of the Commercial Bank of Port Huron, is vice-president; Jas. F. Draper is secretary and treasurer, and Thomas Draper is manager. The company have secured from the city of Port Huron a lease of the old Fort Gratiot Water Works Building and are remodeling the building to suit their requirements. They will manufacture on a more extensive scale the specialties of the old firm, comprising Valve Facing Tools for all styles of Valves, Ball Check Valves, Solid and Hollow Brass Balls for all classes of work, Valves for oil, salt and artesian wells, Brass Valve Disks, &c. The company's products are fully set forth in a catalogue, which also

contains testimonials from users of the Draper Tools in all parts of the country.

ERICSON & JOHNSON are a new firm in the plumbing and tinning business at 48 Dwight street, New Britain, Conn. They desire to receive catalogues and quotations from dealers in their line.

THE FRIEND MFG. COMPANY of Gasport, Niagara County, N. Y., have been incorporated to manufacture Pumps, with a capital of $150,000. The directors are George H. Hull, W. N. Hull and A. B. Hull of Gasport.

AT a meeting held in Pittsburgh recently the company operating the Homer Brass Works of Philadelphia, Pa., were reorganized with the aid of Pittsburgh capital. The firm name has been changed to the Homer Brass Works, Incorporated, of Pittsburgh and Philadelphia, with C. S. Frishmuth of Philadelphia, president; James L. Hukill of the Pennsylvania Car Wheel Company, this city, vice-president; A. R. Bassett of the Pennsylvania Car Wheel Company, treasurer, and L. R. Wooldridge, secretary. The company are engaged in the manufacture of Plumbers' Supplies, though the manufacture of a general line of Brass Goods will be taken up later. The location of a branch plant in Pittsburgh is being considered, but has not been decided upon. The brass finishing department of the plant at Philadelphia will be enlarged and new machinery installed.

ARTICLES OF INCORPORATION of the Williams & Marvin Company of Saybrook, Conn., have been filed with the Secretary of State. The corporation are organized for the manufacture and sale of Turned Wooden Goods, Hardware and Plumbers' Supplies. The capital stock is $1800. The subscribers are Charles R. Marvin, Mary A. Williams, Ellen M. Post, Clara W. Williams, Mary A. Norton, Jane E. Marvin and Ernest L. Prann.

A Royal Kitchen.

We are accustomed to barbaric splendors at the Russian imperial court, but it is not generally known that the kitchens at the Palace of St. Petersburg form a magnificent part of it, says a writer in the *Westminster Gazette*. The walls and ceilings of these establishments are of black marble, covered with valuable ornaments. The kitchen utensils are of solid gold, and date back to the time of the Empress Catherine. Their value is £10,000, and there are among them several saucepans worth £50, while a fish kettle is worth £1000. The kitchen staff consists of 267 persons, and the head cook receives a salary of £10,000 a year. Six other cooks earn each from £1000 to £1500. From these figures it appears that, next to the Spanish court, that of the Great White Czar is the most luxurious in Europe.

But all these splendors pale before those of the kitchens of the Shah of Persia at Teheran. There the meanest vessels are of gold, and every article of the dinner service is incrusted with precious stones. No wonder the Shah's kitchen battery is valued at £1,000,000.

Bronson & Minor, counsel for the E. J. Manville Machine Company of Waterbury, have entered suit against John Carroll and John J. McCarthy for $100 damages, the case to come before the City Court the latter part of this month. The company sue because of an alleged violation of an agreement entered into some time ago between Mr. Carroll, his son, Francis T., and Mr. McCarthy. Francis Carroll was until recently an apprentice at the E. J. Manville Machine Works. When the strike came young Carroll went out with the other workmen, and by doing so, the company claim, he violated one of the clauses in the agreement. According to the complaint Carroll, through his father entered into an agreement with the company to work as an apprentice for at least three years. Mr. McCarthy, by attaching his signature to the document, guaranteed that Carroll should carry out the terms of the agreement. The plaintiff company claim damages for the breach to the amount of $100.

A New Welding Process.

The old difficulty of welding aluminum—a conundrum which has puzzled so many—has been tackled by Dr. Hans Goldschmidt with the usual German scientific thoroughness. He has succeeded in producing a temperature of 2000 degrees Cel., not by using the electric furnace, but by burning aluminum in hydrogen. Certain mixtures are necessary for the continuous combustion of aluminum. As a proof he mentions an experiment in the course of which he produced a temperature of 3000 degrees Cel. in a crucible, and with the heated fluid he perforated an iron plate ⅝ inch in thickness, with such rapidity that the plate itself could not absorb any heat, and the hole showed sharp contours. This experiment has given rise to the hope that such a cheap and quick way of producing high temperatures might be of practical use in welding. Dr. Goldschmidt immersed the pieces to be welded in the heated fluid, but this was found to be impracticable, as they became corroded, but in later experiments he poured the heated fluid upon the pieces. This new process is specially applicable in cases where other processes are not obtainable, especially with pipes and rails. Trials with pipes of different diameters have shown clearly the great cheapness of this process.

Aluminum Furniture.

What a fortune awaits the individual who discovers some simple and inexpensive way to extract aluminum from common clay, says the *Furniture Worker*. At the present time, by the advance in electricity, it can compete with copper in the manufacture of articles usually made of that metal; and who knows but that some shrewd scientist, by a still further cheapening of the cost of generating electricity, or an improved method of extracting aluminum from its ores, will render it the missing link of furniture evolution.

With aluminum furniture one man will be able to handle the heaviest dining table, and the small boy lift a chiffonier. Aluminum and glass will make up all case goods, and aluminum alone will be made into tables and chairs, parlor furniture and couch frames. The serenade of the saw mill will cease in rural groves, the planer's discordant chimes will be silenced forever, and the wood turner, wood carver and wood finisher will be a race extinct.

Warm Weather Houses.

The heat of the present summer ought to have some effect upon the construction of homes with reference to warm weather, says a recent issue of the Kansas City *Star*. In every large city, and even in the country, for that matter, all houses of considerable size should have some special provision for excessive heat as well as for extreme cold. The roof garden idea is capable of wide application. It may be utilized in an elaborate way in connection with fine homes, or it may be employed in a limited but saving extent in building smaller houses. For the past two weeks those who have had large verandas or flat roofs, especially such as could be resorted to as improvised sleeping quarters, have enjoyed an inestimable advantage over those who have been forced to occupy close rooms, shut off from the breezes that alone have made life tolerable. The time will come when there will be a general revolution in house construction with reference to hot seasons, particularly in the warmer climates.

United States Consul Swiney of Cork informs the State Department that an exposition of the products and industries of Ireland will be held at that city in 1902. The site selected is on the banks of the River Lee. The people of Dublin, Belfast and other cities of Ireland have promised their support, and have already liberally contributed toward the erection of the buildings and the preparation of the grounds. The railroads have also subscribed, and, in addition, will make low rates to visitors. The Consul adds that a number of the exhibitors at the Glasgow Exposition will send their exhibits to Cork.

The Steel Strike.

Developments of the strike in the past week indicate that the Amalgamated Association realizes that it is engaged in a struggle for existence, and that organization is putting forth every effort in its power to cripple the United States Steel Corporation in the operation of their plants. The situation has been complicated by the desertion of the Joliet and Milwaukee men, which cuts off a monthly production of about 40,000 tons of steel products. To these two steel plants must be added three of the steel works of the National Steel Company, the Bellaire, Mingo Junction and New Castle, and the Riverside and McKeesport steel plants of the National Tube Company. The tube industry has been that most seriously affected by the latest developments, since now the works in the Pittsburgh and Wheeling districts, the most important of all, are idle. The hoop and bar mills have been gaining steadily in tonnage, and the same is true, to some extent, of the sheet mills.

The situation in the sheet mills is slightly better than it was a week ago. All the mills of the American Sheet Steel Company in the Kiskiminetas Valley are running to utmost capacity, and are turning out a larger output than ever before. There have been outbreaks several times at the Wellsville Works, but no serious damage has been done. The Wood Mill at McKeesport is still closed, and there are no signs that these works are to be removed to Vandergrift, as reported. An attempt was made to start the Cambridge plant at Cambridge, Ohio, but it was not successful, and it is possible that this plant may be removed to the Vandergrift district. It is the intention of the American Sheet Steel Company to concentrate their works in the Kiskiminetas Valley, as the concern have no trouble with the men in that district.

There are in operation now 66 sheet mills belonging to the American Sheet Steel Company, which includes six at Wellsville, 46 at Saltsburg, Apollo, Vandergrift, Hyde Park and Leechburg, and 14 at the Old Meadow and Scottdale plants. These are producing now more than one-half of the normal output of the whole capacity of the company. Hyde Park was started full at once with five mills on three eight-hour shifts. Within the next few days an additional number of sheet mills will be started.

In regard to the tin plate mills, the Crescent Works at Cleveland have been started up and nonunion men have been introduced into the Star mills at Pittsburgh and the American Tin Plate Company's plant at Irondale, Ohio, both of which plants have partially resumed work. Also fires have been lighted and the machinery moved at the Demmler plant. Otherwise the situation in the tin mills is unchanged. The Monongahela Works, in the Pittsburgh district, and the Pennsylvania and Pittsburgh Works at New Kensington are idle and with no signs of being started. It is probable that an attempt will be made soon to start the Greer and Shenango Works at New Castle. These are the largest mills owned by the American Tin Plate Company, and the men who went out on strike are said to be very restless and anxious to get back to work. The large Monessen plant is in full operation.

All efforts to induce the employees of the South Chicago works of the Illinois Steel Company to strike have thus far been unsuccessful. Reports that a number of the men had quit work on the plea of sickness, but are really on strike are declared to be untrue. The only striker at this time is District Vice-President Davis, who seems to have lost his influence at South Chicago.

A statement addressed to labor organizations and to the public, signed by 14 men who claim to represent the members of the Amalgamated Association employed in the steel works at South Chicago, has been issued. The statement is an extended argument in justification of the refusal of the South Chicago men to violate their contract with the Illinois Steel Company, which specifically provides that the wage agreement can be broken under no circumstances except by either party to the agreement giving three months' notice of its intention, the notice to be given previous to October 1.

The statement quotes a decision rendered in 1897 by M. M. Garland, then president of the Amalgamated Association, disavowing the action of certain rail straighteners who sought to violate a similar contract with the Illinois Steel Company. It also quotes statements heretofore made by President T. J. Shaffer of the Amalgamated Association and John Mitchell, president of the United Mine Workers, upholding "the sacredness of labor contracts."

In conclusion the statement says:

"After taking legal advice we feel certain that President Shaffer's claim that our contracts are void because the Illinois Steel Company, with whom our agreement was made, have been absorbed by the United States Steel Company, is without foundation.

"The principles of union labor are as dear to us as to any men in the country who earn their living by honest toil, but we do not think we should be expected to violate every rule of business integrity and personal honor for a matter of sentiment, for this is a time when we must not let our sympathy get away with our better judgment."

While the strike looks more serious now than at any time since it started, there can be only one outcome to it, and that is the complete defeat of the Amalgamated Association. Of course, a compromise of the trouble is possible, but if this should come it will be on terms dictated by the United States Steel Corporation. An official of the Carnegie Steel Company is authority for the statement that no negotiations are on looking to a settlement of the strike.

EFFECT OF THE STEEL STRIKE IN CANADA.

A Canadian correspondent, writing from Toronto under date of August 16, has the following to say with regard to the effect of the steel workers' strike in this country on the Canadian markets for tin plate and sheets:

Canada draws nearly all its tin plate from the United Kingdom. That commodity is the main relic of the large trade in iron and steel done here by British manufacturers prior to the last half decade of the nineteenth century. In the fiscal year 1900 the Welsh mills sent to this country 480,794 cwt. of tin plate, and those of the United States sent 8364 cwt. This country, therefore, will not be likely to suffer in consequence of the tie up at the works of the American Tin Plate Company. So far from Canada looking to the United States just now for tin plate the reverse seems to be the case. According to advices from Montreal American agents are buying up all the British tin plate they can get at that point. The Montreal manufacturers of tinware are well supplied, having on hand stocks large enough to keep them going till spring. Some of them are said to have disposed of large lots at prices that yield them a handsome profit, getting in some instances $2 a box more than could have been realized a month or two ago. As a rule, however, they are understood to be holding on to the bulk of their stocks, the sales that have been made being from a surplus that is usually carried there with an eye to speculation at this season. Canada's own needs are just now too pressing, the orders for tins, &c., at the works are of too great volume for it to be possible to part with any considerable proportion of manufacturers' stocks.

The closing of the mills of the American Sheet Steel Company affects this country more seriously, as we buy from the United States a large part of our supply. Of Canada plates, flat galvanized iron and steel sheets, &c., we imported in the fiscal year 1900 133,697 cwt. from the United States, as against 287,403 cwt. from Great Britain. Of rolled iron or steel sheets of No. 17 gauge and thinner we took in the same year 79,668 cwt. from the United States and 92,737 from Great Britain. Of bar iron and steel the purchases from the United States in that year were 179,062 cwt., as against 82,480 cwt. from Great Britain. Thus it is to be seen that if the supply of these products should be cut off at United States mills by the strike, the matter would be corrected by an

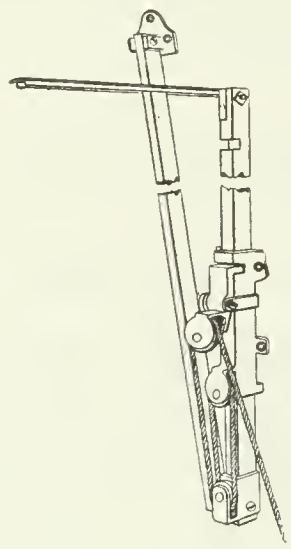
expansion of the present Canadian demand at British works. As the duty on British iron and steel is only two-thirds that on American iron and steel the transfer would not be materially obstructed by the tariff.

American Sheet Steel Company's Improvements.

The question of the removal of the Wood plant of the American Sheet Steel Company at McKeesport, Pa., has been dealt with. We understand that plans are now being made for an eight-mill plant, to be driven by a high duty engine, for the new works. In dismantling some of the housings of the mills it was found that bed plates were broken and that generally the old machinery was in poor condition. Very considerable improvements are under way at the Vandergrift plant of the American Sheet Steel Company. There is now in course of construction a new eight-mill plant, and this is to be followed later on by a second group of eight mills. The sheet bar mill, too, is to be increased in capacity.

Bickelhaupt's Patent Skylight Lift.

We show in the accompanying engravings a patent skylight lift which has just been brought out by the G. Bickelhaupt Skylight Works of 243 and 245 West Forty-



Bickelhaupt's Patent Skylight Lift.—Fig. 1.—View of Operating Mechanism.

seventh street, New York City. The construction is such that the lift can be applied to either hipped or flat skylights and when closed is securely locked. It is referred

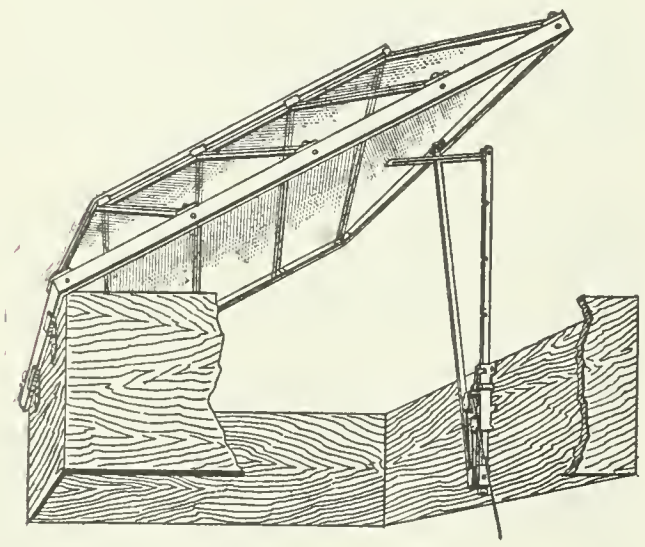


Fig. 2.—View of Device as Applied to Skylight.

to as being so simple that any one can operate it, and its use will greatly facilitate the ventilation of rooms by reason of the ease with which a skylight may be opened and retained in that position. Fig. 1 gives an idea of the mechanism of the lift, while Fig. 2 shows it applied to a skylight represented in an open position. In putting on the device the slide holder is fastened to the curb and the joint to the skylight and raising bar. A slight inward pull of the rope will cause the lever to catch in the notches of the lifting rod in the slide holder, thus maintaining the skylight in an open position. In order to close it a pull on the rope will release the lever from the notches and the skylight may be gradually lowered.

Sheet Metal Ceiling and Siding.

We have received from the La Crosse Steel Roofing & Corrugating Company of La Crosse, Wis., a copy of a 32-page catalogue showing a series of handsome designs of metal ceilings and siding. The pages are of such a size as to permit of the use of large cuts, thus indicating more clearly the beauties of the designs, which are classified and are suitable for all classes of buildings, such as school houses, theatres, churches, business establishments, amusement halls, residences, &c. The classic designs which are shown are briefly described and the origin of the word traced, so as to render the sheet metal worker intelligent concerning any particular design which he may use. Illustrations are given showing the application of continuous ceiling and side wall to wood furring, also the application of panel ceiling and continuous side wall to wood furring. The styles illustrated include the Greek, Romanesque, Rococo, Empire and Colonial. The last page in the catalogue is devoted to profiles of cornices, moldings, &c., in the various styles mentioned.

FLASHINGS.

The Jackson Iron & Tin Plate Company of Clarksburg, W. Va., recently incorporated, have organized by the election of the following officers: President, Col. T. M. Jackson; secretary and treasurer, W. I. Grove of Columbus, Ohio, and general manager, George Barkman of Columbus.

One satisfactory feature of the present scarcity in the Tin Plate and Sheet markets, so far as the jobbers and manufacturers are concerned, is the opportunity of cleaning out old stocks of these goods which have been lying in warehouses for long periods. Even Plates that were regarded as almost unsalable are eagerly snapped up by hungry buyers. "Everything goes" in the line of sheet metal these days.

It is announced that the American Can Company have decided to dismantle their factory at Youngstown, Ohio, formerly owned by the Youngstown Specialty & Mfg. Company, and remove the machinery and equipment to some of the other plants owned by the concern. The factory employed 75 hands and was equipped with the most improved machinery.

The American Tin Plate Company, it is announced, will immediately enlarge their National Works, at Monessen, Pa., to double their present capacity, making it a 24-mill plant. The decision of the company is a direct result of the strike. To secure the room necessary for the proposed enlargement the company have purchased 13 acres of land on the river front adjoining the present works. The addition will cost about $750,000 and the work is to be finished within nine months. When the addition is completed employment will be given to about 1500 men.

G. P. Williams, formerly with the St. Louis Stamping Company and more recently with the National Enameling & Stamping Company, has opened an office at 253 Broadway, New York, where he will act as agent for Hall & Carpenter of Philadelphia, the Sozo Supply Company, makers of Metal Polish, and several other firms.

The Buckingham-Routh Company, New Haven, Conn., are doing the Skylight and Metal work in connection with the addition to the National Pipe Bending Company's works in that city.

W. Vernon Phillips of F. R. Phillips & Sons Company, Philadelphia, who is now in Europe, has instructed shipment of a large quantity of the firm's Zero Metal to London and Germany, as well as to New Zea-

land. Mr. Phillips is negotiating the installation of an American type tin mill on the Continent.

THE JAMES H. WATSON ESTATE, Crawfordsville, Ind., send us a copy of their recent catalogue, which fully illustrates and describes their line of Crest-Tile Conductor and Steel Cresting, also their assortment of general Tinners' Supplies, which include Eave Trough, Conductor Pipe, Elbows and Shoes, Gutters, Valleys, Finials, Vanes, &c. Several pages are devoted to Crestings, of which the estate are large manufacturers, and a number of testimonials are included from those who have used the Watson Crest-Tile Conductor.

THE STANDARD METAL MFG. COMPANY, 53 New Jersey Railroad avenue, Newark, N. J., are a new concern who have a factory equipped for undertaking special Sheet Metal work of every description, including stamping, metal spinning, electro plating, buffing and polishing, japanning and decorating. They are prepared to do large or small work in Iron, Brass, Copper, Tin, Aluminum, Zinc, &c., and make a specialty of Standard Hoods, Shades and Fixtures for lighting purposes. The concern are composed of W. A. Lawrence, L. L. Terhune and F. I. Munn. Mr. Terhune, who was formerly connected with the Tea Tray Company of Newark, is in charge of the factory department of the concern. The New York City office of the company is at 10 Warren street.

IN a reference made in our issue of last week to the newly organized Heekin Can Company, the address of the concern was given as Columbus, Ohio. The company are located in Cincinnati, Ohio.

GEO. CALLAHAN & CO., 218 Front street, New York, are the manufacturers of an Elastic Paint Oil which they recommend to the notice of the roofing trade as a substitute for linseed oil. It is the color of boiled linseed oil and is used in the same way, only that it requires no dryer and no thinner. The manufacturers claim that the Elastic Paint Oil possesses advantages over linseed oil for roof painting purposes in that it is elastic, and will not dry up or lose its holding or binding quality, as linseed oil is apt to do when subjected to hot sunshine in the summer months.

THE POPE TIN PLATE COMPANY, recently organized at Pittsburgh, have decided to locate their works at Steubenville, Ohio. The supply of Black Plate will be obtained from the La Belle Steel Company, whose mills are at that place.

THE ALCANIA COMPANY, Murtland Building, Pittsburgh, who have made application for a charter, do not intend to take up the making of new lines of product. The concern will continue to make Tin Plate at their present works, but will operate under a Pennsylvania charter, instead of a West Virginia charter as at present.

THE KINNEAR MFG. COMPANY of Columbus, Ohio, are sending out a folder calling attention to their Kinnear Folding Door, and bearing upon the outer side the inscription, "The Open Door and How to Close It." Illustrations are presented showing the door open and closed, and there is also a sectional view indicating the joining of the slats. These doors and shutters are provided with special constructions suitable for warehouses, business blocks, public buildings, elevator shafts, freight houses, &c., and the company request those interested to write for catalogue "K," which they will send to any address on application.

IT is believed that the American Tin Plate Company will erect more tin mills on the land they have recently purchased near New Castle, Pa., where two of their largest plants are situated. Probably some of the smaller plants in other places will be dismantled and removed to New Castle, in pursuance of the policy of concentrating productive capacity which is being gradually introduced into all the interests controlled by the United States Steel Corporation.

The population of the Dominion of Canada, according to the census returns just given out, is 5,337,166, an increase of 503,827 over the census of 1891. Taken by provinces the increases are as follows: Quebec, 132,434; Ontario, 53,657; Manitoba, 92,212; Northwest, 79,300; Yukon and unorganized district, 43,113; British Columbia, 92,000, and Maritime Provinces, 11,000.

The Concentration of Manufacturing Plants.

The expressed determination of the officials of some of the constituent companies of the United States Steel Corporation to remove some plants from one locality to another has brought a perplexing question conspicuously before the country. It is not a new issue. It has been before the parties interested ever since the formation of the great consolidations. There has always been a certain mobility with American manufacturing plants. It has been nothing unusual for a manufacturer to transfer his works to some more favored locality, although a preliminary step in many instances has been to establish branch works which gradually overshadowed the parent concern. Nor has it always been on its merits pure and simple that a removal has been effected. Special inducements from boom towns or an effort to make a last stand against dry rot have been the motives in many cases.

It is no wonder that, after gathering in every available plant identified with a particular industry, the managers of a modern consolidation find themselves face to face with the problem of abandoning poorly located, poorly equipped, antiquated or inadequate establishments and utilizing such parts of them as are worth saving.

That this often works very serious hardships upon small communities and upon groups of workingmen is obvious. In fact the owners of such plants have been seriously, and in some cases justly, blamed for abandoning those to the guarding of whose welfare they had practically committed themselves. We know of instances in which the men were encouraged to put all their savings into the building of homes and were led to assume serious obligations. These interests were sacrificed, apparently without a thought, by owners of works who jumped at the chance to sell out, generally at an unexpectedly handsome profit. They may have pleaded against the closing down or the removal of the works and the accompanying ruin of many industrious and frugal men, but there the matter ended.

The managers of a consolidation cannot well be blamed for pursuing a course dictated by their duty to the stockholders of their company. Concentration of operations is imperative in the interests of economy, and it is absolutely necessary that that surplus capacity be put into reserve which is incapable of producing goods cheaply enough.

The strike in the Western rolling mills has now, however, introduced a new element, which prudent manufacturers cannot afford to leave out of consideration. That is the attitude of a community or of its officials toward those fundamental rights which are guaranteed to every citizen and corporate body. Where property is no longer sacred, where demagogues control a community, the owners of industrial plants are burdened with very serious risks. The danger involved may overbalance many otherwise important considerations, and may justify a course repellant to humanity and to the regard for the interests of others.

The present has been regarded as an opportune time to effect some of the schemes of concentration of plant which an active business has thus far rendered impossible. We believe that strictly economic considerations have influenced the officials of some of the constituent companies of the United States Steel Corporation in deciding upon the removal of smaller works to other localities. In fact that movement has been in process in some branches for a considerable time. But it is obvious that the developments during the present strike have introduced a new factor which was not taken into account before. Let it be hoped that it will prove a salutary lesson to the great majority of law abiding men in all our industrial communities who, through indifference or through timidity, allow the demagogues and the small radical element to jeopardize their interests.—*The Iron Age.*

"Mica in the Province of Quebec" is the title of a monograph in French by J. Obalski, Government mining engineer of Quebec. It describes the deposits of the province in detail.

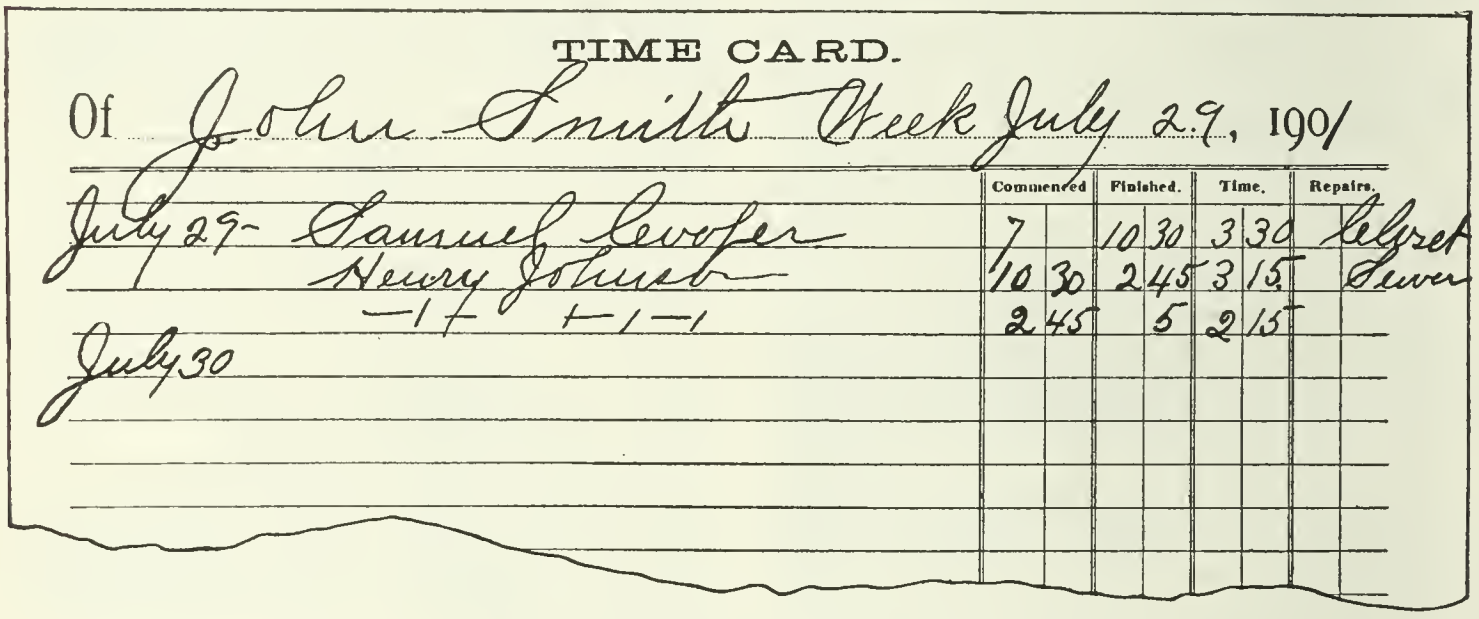
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

ACCOUNT OF PLUMBERS' TIME.

From J. M. White, Bristol, Conn.—In response to the request of "C. H." in *The Metal Worker* of July 27, I submit a time card that I have used for keeping track of the time spent by plumbers and other workmen working on contract work or different jobs. Each man is given a card on Monday morning on which to keep his time for the week. If he works for two or three different customers on the same day the time spent on each job must be accounted for. He must enter the date and name of the customer, then the time he went to work, the time he stopped and the time spent, as well as the kind of work done. For each customer he must turn in a charge slip from a blank pad furnished him, giving the date, name of customer, time spent and material used. This serves as a check on the time and a memorandum of the material used, so that nothing may be omitted from the charge through oversight. It is well to question a man, however, if he used any putty, washers, screws, tacks, solder, pipe fittings, &c., for it is very easy to forget a few cents' worth on every job that will melt the profits down to the danger line. Another thing, the time on the charge slips and on the time card turned in at the end of the week must tally. The average workman takes some pride in keeping his time correctly and is eager to avoid any loss of material.



TIME CARD.

Of John Smith Week July 29, 1901

	Commenced		Finished.		Time.		Repairs.	
July 29- Samuel Cooper	7		10	30	3	30	Celyrat	
Henry Johnson	10	30	2	45	3	15	Sewer	
—1+ +1—1	2	45		5	2	15		
July 30								

Account of Plumbers' Time.—From J. M. White.—Full Size of Card, 8½ x 7¼ Inches.

From Miller & Johnston, Fall River, Mass.—A correct account of material used and workmen's time spent on jobs goes a long way in preventing loss on work of all kinds, and we are glad to present our slips and an explanation of their use for "C. H.," who asks for a time record system in *The Metal Worker* of July 27. The slip reproduced in Fig. 1 is used by the workmen to report their time and has this advantage: It has the name of the customer and the date, and is filled out in the presence of some of the family or servants, who sign the slip. When the man reaches the shop the slip is checked to see if the time of leaving and returning to the shop is correctly stated, after which it is signed by us and filed for reference. By having the customer's name signed to the time slip lots of expense and time are saved, for if, when the bill is rendered at the end of the month, the time is disputed, it is a simple matter to find the time slips with the customer's name on them and show them to him, thus ending the dispute.

Another set of slips in our system that are equally valuable are the charge and credit slips. They are three in number, the "job work charge slip" being shown in Fig. 2, and are all of the same size, but of different colors. The "job work charge slip" is yellow, the "contract work charge slip" is pink and the "credit slip" light brown, so that they are readily distinguished and confusion is avoided. The slip has a place for the date, the name of the party against whom the charge is to be made and the name of the workman. The credit slip has at the bottom two lines, one beginning with the words "job work," the other "contract," so that a memorandum can be made of the job or work, the material returned and the credit to be made. When a workman fills out a time report he also fills out a yellow or pink

MILLER & JOHNSTON.

WORKMAN'S REPORT OF TIME

—ON—

Mr. John C Blake. Job Aug-5 1901

Left Shop 7-1-M. Reached Job 7-30 1-M.

Left Job 4-15 P.M. Reached Shop 4-45-P-M.

Andrew Smith Workman.

The time of beginning and leaving work is correctly stated.

John C Blake

The time of leaving and returning to shop is correctly stated.

Miller Johnston

By Locke

Account of Plumbers' Time.—From Miller & Johnston.—Fig. 1.—Workman's Time Report Slip; Regular Size, 6 x 4 Inches.

FALL RIVER, MASS. _____ 190

MILLER & JOHNSTON

JOB WORK CHARGE SLIP

CHARGED TO _____

DESCRIPTION OF ARTICLES

WORKMAN _____

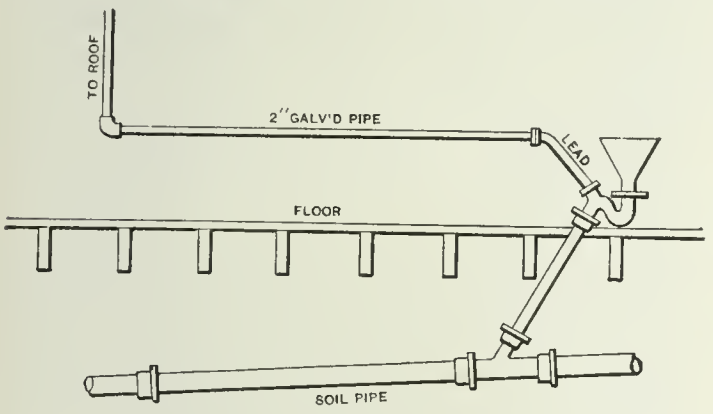
Fig. 2.—Charge Slip; Regular Size, 5½ x 8½ Inches.

slip with the material used, there being space for a number of items. If the charge slip has been filled out and handed in when the material was sent to the job and same is returned when the job is finished, the credit slip is filled out.

By this means, and the use of some care and supervision, the charges include not a part, but all of the things used, and a very considerable saving is effected. No part of the time spent in managing a business pays a better profit than that devoted to keeping the tools and material ready for the workmen and seeing that they get off promptly to jobs, and that they account for their time corectly and in filling out their time slips include every little item of material used.

A QUESTION FOR THE PLUMBING INSPECTOR.

From H. T., New York.—In reply to the letter of "N. J.," in *The Metal Worker*, August 3, I would recom-



A Question for the Plumbing Inspector.

mend that the back air pipe be carried horizontally in the partition to a corner where it can be turned up, as shown, and run through the roof. That is the proper way to do the job.

MAKING A CELLAR WATER TIGHT.

From F. R., Coalville, Utah.—I have a cellar which is 6 feet deep with an 18-inch stone wall all around. During the summer months water rises 12 to 14 inches, and I desire to learn what I can do to keep the water out and make a good, clean cellar. The ground in which the cellar is built is mostly gravel, especially the bottom. If any of the readers of the paper can assist me in this matter they will greatly oblige one who has only the best wishes for the success of the paper.

WILL A SIPHON WORK?

From A. M., Dryden, N. Y.—Will *The Metal Worker* help me with a little information about a siphon? We have a well 100 feet deep in which the water raises to within 40 feet of the surface. Can water be drawn from the well with a siphon having a fall of 100 feet?

Answer.—A siphon works through the water falling in the long leg and creating a tendency toward a vacuum in the short leg and the atmospheric pressure on the surface of the liquid in which the short leg is immersed forces the liquid up to fill the vacuum. As atmospheric pressure varies with the altitude above the sea level the hight to which water may be lifted by it varies; but it will never raise water 40 feet. With perfectly tight pipes, water may be lifted about 30 feet by a siphon, but to keep the pipes or siphon air tight is one of the troubles experienced with all siphons. This trouble is reduced as the lift is reduced. If the water in the well can be depended upon to always reach a level of 45 feet below the ground a siphon can be used, if the pipe forming it is buried so that the highest point is 20 feet below the ground. This would leave a lift of but 20 feet when the water reached the 40-foot level and 25 feet when at the 45-foot level.

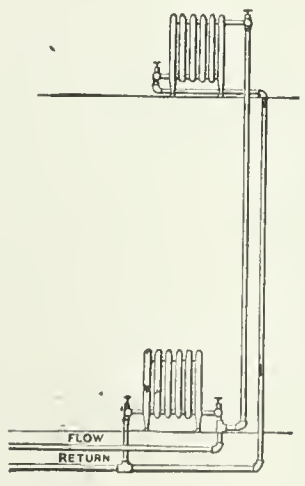
To operate effectively the pipe must be air tight and have a carefully preserved pitch both ways from the highest point. At this point a pipe should be carried up to the surface of the ground, having a stop cock on it and terminating in a funnel. As all water has more or less air in it the air will accumulate at the high point in the siphon and in time stop its operation. Then it is only necessary to keep pouring water into the funnel with the stop cock open to start the siphon, when the stop cock can again be closed until needed. Lead pipe with carefully made joints is best adapted for a siphon, as there is less liability of air entering through it. The flow of water is governed by the head or distance of the delivery point below the point of supply and also by the friction due to the length of the pipe and its size.

SETTING HORIZONTAL HOT WATER TANKS.

From J. A. S., New York.—A little account of my experience in setting horizontal hot water supply tanks may be of interest to "H. & C.," whose letter I read in *The Metal Worker* of August 17. In the first place, there is nothing wrong in setting the tank on brick piers. There are many set that way in this city, so it is sanctioned by custom. The brick piers may absorb some heat, but a greater objection is the space occupied by them. In most instances the overhead joists are strengthened so that the tank may be suspended from them. Then, when covered, there is little loss of heat. Another method of supporting them is to build a rack of wrought iron pipe, the lower ends resting in floor flanges and the floor flanges at the top being secured to the ceiling. Tees are put in the uprights at the proper hight for cross pieces of the proper diameter and length to support the tank when filled with water. Strength is necessary and the brick piers of "H. & C." provide it. The upright tank of large size is finding some favor, as it occupies less space, can be set on short legs or piers and can be connected to circulate well and to furnish hot water quickly. It also requires less special preparation and expense to set it. A cheaper way is to run one end of a piece of heavy pipe into a hole in the wall and the other end into an ell on the end of another piece of pipe resting on the cement floor.

HOW SHOULD RADIATOR BE CONNECTED?

From S. F., New York.—In answer to the letter of "I. R.," in *The Metal Worker* of August 10, I give the method of connecting two radiators on different floors



How Should Radiator Be Connected?

recommended in many hand books. The sketch shows that on the end of the main an ell is used for a riser direct to the first-floor radiator. Below this connection there is a tee to connect the riser for the radiator above. The returns are carried as shown. This method insures that both radiators will warm up in about the same time, making the distribution of the hot water about equal. If "I. R." connects his radiators in this way his customer will be satisfied with the heating.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is dull and ½c. lower in price.

Copper is without change and quiet.

Pig Lead is in steady demand and unchanged in price.

Spelter rules a shade firmer, but is very quiet.

Antimony is unchanged.

Nickel is firm and scarce.

Aluminum continues in active demand at former prices.

Tin Plates are still more scarce and prices high and stiffening.

Sheets are in active demand and scarce supply, with prices nominal.

Old Metals are dull and weak.

Sheet Copper is in good demand and firm in price.

Sheet Zinc shows no change.

Pig Iron prices are well maintained, although demand is not so active.

Hardware is moving in good volume and prices are generally firm.

Wrought Iron Pipe is still extremely scarce and prices rule high.

Plumbers' Marble Work is likely to be advanced 10 per cent.

Lead Traps and Bends have been marked up 5 per cent. in price.

Lead Pipe and Sheet Lead will probably be advanced in price shortly.

Stove Boards are becoming scarce and stiffening in price.

Wire Nails are in good demand at former prices.

Cut Nails are unchanged.

Wire is active and prices firm.

Chain is very firm.

Cordage prices are irregular.

White Lead is unchanged.

Mixed Paints are weaker, owing to drop in Linseed Oil.

Linseed Oil has declined 7 cents a gallon.

METAL MARKET.

NEW YORK, August 23, 1901.

Pig Tin.—The market during the week was quiet, with prices sagging. Prices rule about ½c. lower than at the date of our last report. Straits Pig, in small lots, is quoted by jobbers at 27¼c. to 27½c. per lb. Demand is slow and the volume of business transacted was quite small. The half-monthly shipments from the Straits were 2070 tons, as against 1680 tons for the same period of last year. The metal continues to arrive more freely, there having been landed so far this week 910 tons. This brings the total for the month to 1795 tons. A good portion of the new arrivals, it is said, go to a speculative concern, and it is supposed will be stored. The trade is at a loss to comprehend the object of such proceedings in the face of heavy discounts on future deliveries, and also in spite of the present condition of trade through the steel strike. It is also considered that through increased production everywhere the position of the article as to the future is by no means promising.

Copper.—The situation is unchanged. Business as a whole is dull, although domestic manufacturers are buying right along. Prices are unchanged. Small lots of Lake Ingot continue to be quoted at 17¼c. to 17½c. per lb. and Casting Copper at 16¾c. to 17c. The position of the metal is not considered a healthy one, when with a monthly production of 22,000 tons we have ceased to export our surplus. So far this month the exports were not more than the imports, about 3600 tons having arrived and a like quantity being shipped. During the previous seven months of this year our net exports—that is, deducting the figures of imports—amounted to only about 30,000 tons. That there is an accumulation of stocks on a very large scale is not questioned, and it is predicted in the trade that this will continue as long as prices here are maintained on a level so much higher than the European value. Production in this country so far this year has not increased, but everywhere else in the world is increasing. European producers, as far as their report for this month shows, have increased their output very materially. The report for the month of July shows a production of 9254 tons, as against 7433 tons of last year. Many unverified reports are current as to an understanding among the leading producers of the world.

Sheet Copper.—A satisfactory demand for Sheet Copper is reported and prices are firm on the basis of 21c. per lb. from store.

Pig Lead.—There is no change in this market. A quiet, steady business is being transacted and prices remain firm at former level. Small lots of American Pig are quoted at 4.60c. to 4.62½c. per lb. St. Louis reports a quiet market, with prices showing little or no change.

Spelter.—This metal is a shade firmer, but very quiet. Good Western brands, in small lots, are quoted at 4.45c. to 4.50c. per lb. St. Louis reports an unchanged market. Nothing more is heard of the Spelter combination, and it is presumed it is off again for a period at least.

Sheet Zinc.—The demand for Sheet Zinc is moderate. Jobbers quote 600-lb. cask lots at 6¾c. per lb. and smaller quantities at 7¼c.

Antimony.—A fair demand is noted. Prices are without change. Cookson's, in small parcels, is quoted at 10½c. to 11c. per lb., and Hallett's at 8½c. to 9¼c.

Nickel—Is firm and unchanged. Small lots are quoted nominally at 60c. to 65c. per lb.

Aluminum.—A good demand at former prices is reported. No. 1 Ingot, guaranteed 99 per cent. pure, in small lots, is quoted at 37c. per lb. and 100-lb. lots 35c.

Tin Plates.—The situation in this market presents no new features. Available stocks of Plates are rapidly dwindling and the scarcity is daily becoming more pronounced. Ordinary Coke Tins are in particularly short supply and many users of these Plates are feeling the squeeze to an uncomfortable extent. But little business is being done, as holders have hardly anything to offer, while buyers are taking nothing beyond what they are absolutely compelled to purchase. Plates for spot delivery command a very high premium. While quotations are merely nominal, it may be said that American Bessemer Steel Coke Plates, IC, 14 x 20, at New York or corresponding points, cannot be purchased at much less than $7.15 to $7.25 per box, which is about $2.50 a box higher than the price ruling before the strike. Importations are coming in now right along, but practically every box entered is sold before arrival, so that nothing is added to the general market. A steamer which arrived from Swansea at the beginning of the week had on board 20,000 boxes, more than half of which will go into consumptive channels. A further advance was made this week in the price of Welsh Coke Plates, bringing them up to about $5.50 per box, laid down in New York.

Sheets.—The market is very active and the scarcity of Sheets is greater than ever. Manufacturers are doing the best they can to accommodate their trade, but are practically snowed under with orders. Sheets for shipment in August and September are commanding very high prices. Galvanized Sheets are scacer than Black and can hardly be had at any price for prompt delivery. Retail pries are largely nominal. New York jobbers are

quoting No. 27 One Pass Cold Rolled Soft Steel Sheets, in small lots from store, at about 4.15c., and Galvanized Sheets at 60 per cent. off the list. Some sizes, which are the scarcest, command relatively higher prices than others.

Chicago advices are as follows: Merchants having stocks of Light Sheets are enjoying an exceedingly active trade. Orders are being received from all parts of the United States. Jobbers in leading cities remote from Chicago are purchasing from our local merchants, who are limiting the quantity on single orders, as stocks are being depleted too rapidly. Prices are still advancing, 4c. being now the minimum for No. 27 Black, while Galvanized Sheets are to be had in only limited quantities at 65 off, with some sales reported as high as 60 off. The Tin Plate situation is worse than in Sheets. The cheapest full weight Terne Plates are held at $11.50 per box, and 90-lb. I. C., 14 x 20 Coke Plates are selling at $5.60. Stocks are reduced to almost nothing.

Old Metals.—The market for both Scrap Iron and Old Metals is dull and rather weak. A limited demand prevails and stocks in sellers' hands are pretty full. Dealers are paying about the following for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 14¾c.
Light and Tinned Copper	per lb. 13¼c.
Heavy Brass	per lb. 10 c.
Light Brass	per lb. 8 c.
Lead	per lb. 4 c.
Tea Lead	per lb. 3¼c.
Zinc	per lb. 2½c.
No. 1 Pewter	per lb. 18½c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	$6.00
Wrought Iron Scrap, per gross ton	$10.50 to 11.00
Heavy Cast Scrap, per gross ton	10.00 to 10.25
Stove Plate Scrap, per gross ton	6.75 to 7.00
Burnt Iron, per gross ton	5.00 to 5.50

THE PIG IRON MARKET.

New York.—Aside from a good sized inquiry from the pump makers, little is doing in this district, and the market remains quiet. Southern furnaces are holding well at prices equivalent to $10.50 for No. 2 Birmingham. We quote: Lehigh, Schulylkill and Virginia Irous, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $14.50 to $15; No. 2 Foundry, $14.25 to $14.50; No. 1 Soft, $14.50 to $15; No. 2 Soft, $14.25 to $14.50; No. 3 Foundry, $13.25 to $13.50; No. 4 Foundry, $12.75 to $13.25.

Chicago.—The volume of business shows a marked increase. It is true that the city foundrymen are buying very little, but consumers in outside localities are not only taking Iron freely, but in notable instances are placing contracts for future delivery running into next year. It is estimated that the total business of the week was fully 20,000 tons. Inquiries are in hand for considerably more Iron, and a continuance of the improved demand is expected. Prices are held quite firmly, the local furnace companies having their product well sold for the remainder of the year and the Southern companies showing no disposition to make concessions. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon.	14.90 to 15.15
Southern Coke, No. 1	14.90 to 15.15
Southern Coke, No. 2	14.15 to 14.40
Southern Coke, No. 3	13.65 to 13.90
Southern Coke, No. 1 Soft	14.65 to 14.90
Southern Coke, No. 2 Soft	14.15 to 14.40

Philadelphia.—Business cannot be defined as either very good or very bad. Buying is mostly in small lots and for early shipment, the exception being the demand from pipe founders, who have taken something like 10,000 to 20,000 tons during the past few days. Foundry grades are well taken, some of the furnaces being considerably behind in their deliveries, while there are none that have inconvenient surplus. The statistical situation is therefore very satisfactory, and the immediate outlook indicates a continuance of these conditions for some time to come. Sales have been at prices within the limits quoted herewith, according to quantity, quality, time and place for delivery, as follows for the city and nearby trade and 25c. to 50c. less at points within a radius of 100 miles South or West; No. 1 X Foundry, $15.50 to $16; No. 2 X Foundry, $15 to $15.25; No. 2 Plain, $14.25 to $14.75.

Pittsburgh.—There is not enough Iron being sold to fix prices and the tone of the market is very weak. The United States Steel Corporation will not likely need any Iron for September, and some of the Valley furnaces will either have to bank until the strike is over or else pile their Iron. It is probable that stocks this month will show an increase. Standard No. 2 Foundry Iron has been offered at $14, Pittsburgh, and declined. On firm offer it could likely be bought at $13.75. We quote: Bessemer, $15.75 to $16, and No. 2 Foundry, $13.75 to $14, Pittsburgh.

Cincinnati.—The conditions in the Pig Iron market have not changed materially during the past week. Labor troubles and the usual midsummer feeling are credited with keeping trade down to the actual necessities. In this immediate territory the tonnage booked is light, though there has been some fair business reported here from a distance. In regard to prices, there are the usual conflicting statements; some furnaces are evidently holding to the agreement figures and others are shading these 25c. or even more. The outlook is for a continuation of the present conditions. We quote, f.o.b. Ciucinnati:

Southern Coke, No. 1	$13.50 to $13.75
Southern Coke, No. 2	13.00 to 13.25
Southern Coke, No. 3	12.50 to 12.75
Southern Coke, No. 4	12.00 to 12.25
Southern Coke, No. 1 Soft	13.50 to 13.75
Southern Coke, No 2 Soft	13.00 to 13.25
Southern Coke, Gray Forge	12.00 to 12.25
Southern Coke, Mottled	12.00 to 12.25
Ohio Silvery, No. 1	15.50 to 16.00
Ohio Silvery, No. 2	14.50 to 15.00
Lake Superior Coke, No. 1	14.50 to 15.00
Lake Superior Coke, No. 2	14.00 to 14.50
Lake Superior Coke, No. 3	13.50 to 14.00

St. Louis.—The market has been very quiet for the past week and the few sales made were usually carload lots for immediate delivery. Inquiries are not plentiful, and selling agents are anticipating a rather dull period for the next few weeks, if not longer. Some scarcity of No. 1 Foundry in the Birmingham district is noticeable, but the scarcity is not of sufficient importance to have any effect on the price. The general tone of the market is a trifle uncertain, but should the present dullness become pronounced prices will ease off in consequence. We quote as follows, for cash, f.o.b. cars St. Louis:

Southern, No. 1 Foundry	$14.25 to $14.50
Southern, No. 2 Foundry	13.50 to 13.75
Southern, No. 3 Foundry	13.00 to 13.25
Southern, No. 4 Foundry	12.50 to 12.75
No. 1 Soft	14.00 to 14.25
No. 2 Soft	13.50 to 13.75

CHICAGO REPORT.

Scrap Iron and Steel.—Borings and Turnings are in some demand, but other classes of Old Material are dull and prices are weak. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap	$10.50 to $11.00
Machinery Cast	10.00 to ....
Malleable Cast	10.00 to 11.00
Stove Plate (free from burnt)	7.00 to ....
Burnt Iron and Grate Bars	5.50 to 6.00
Sheet Iron and Hoops	6.00 to 7.00
Plow Steel	9.00 to 10.00
Breaking Stock	9.00 to ....
No. 2, such as Shovels, Hoes, &c	.... to 7.00
Old Boilers—whole (Iron)	6.00 to 7.00
Old Boilers (Iron) cut in single Sheets and Rings	9.50 to 10.00
Old Gas Pipe and Boiler Tubes	10.00 to 10.50
Cast Borings	4.00 to 4.25
Turnings	8.50 to 9.00
Horseshoes	11.00 to ....

Old Metals.—The demand has shown some improvement. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	14¾c.
Copper Bottoms	13½c.
Copper Clips	14¼c.
Red Brass	13½c.
Yellow Brass	10 c.
Red Brass Borings	11½c.
Yellow Brass Borings	9 c.
Light Brass	7¾c.
Pipe Lead	4 c.

Tea Lead	3½c.
Zinc	2½c.
Pewter, No. 1	19 c.
Pewter, No. 2	10 c.

Old Rubber.—Consumers are buying very cautiously. Dealers' buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$23.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7¾c.
Rubber Car Springs	....	4¾c.
Inside Bicycle Tubing	....	21 c.
Outside Tubing	....	7¼c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—The volume of business has been quite limited for some time. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis.	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo.	8.25	8.50

A discount of 10c. from these figures is allowed on all Coal ordered to be shipped in August.

THE HARDWARE TRADE.

The demand for all classes of goods continues large, intensified by the prospects of a good fall trade and the apprehension of being unable to obtain goods promptly. While the strictly Hardware business thus far has perhaps been inconvenieuced less than some of the heavier lines of business, many orders have found their way to jobbers' and mauufacturers' back order books through their inability to fill them promptly. Developments in the strike situation are followed closely by the trade, and while the ultimate outcome is not questioned, the temporary menace to trade interests is deplored.

NOTES ON PRICES.

Wrought Iron Pipe.—The condition of the Wrought Iron Pipe market, so far as the consumer is concerned, has gone from fair to bad during the past week. The advanced prices adopted by the jobbing trade on the 13th iust. have not acted as a preventive to buying, but have had a directly opposite effect. It seems as if every one needing Pipe is rushing to cover before prices take another and a higher turn. There surely will be another advance, as already three sizes have disappeared from the local market, and owing to the labor troubles existing at the mills it will be impossible to get any relief from that source.

Lead Traps and Bends.—The members of the Lead Trap Association advanced prices to the trade 5 per cent. on Tuesday, August 20. The advance was unexpected. It was ascertained from a large mauufacturer of these goods that in all probability this will be the only change in price to be made this year, unless the price of Pig Lead should undergo a material advance.

Lead Pipe and Sheet Lead.—The trade need not be surprised if an advance in the price of Lead Pipe and Sheet Lead is anuounced within the next few days. Several of the larger manufacturers are advocating an advance in prices. The scarcity of Galvanized Iron Pipe has caused an enormous demand for Lead Pipe, and as all the Lead presses are being run to their fullest capacity, it is very likely the manufacturers will take advantage of the occasion and advance prices from 25 to 50 cents per 100 pounds beyond the present rates.

Plumbers' Marble Work.—A radical advance in the prices of Marble and Slate Slabs and Stalls for plumbers' uses is likely to be announced within the next few days. The manufacturers, it is understood, already have agreed upon a new schedule of prices, and as soon as a few preliminary details are arranged the new prices will be made known. The advance will probably be in the neighborhood of 10 per cent. upon the present costs.

Solid Porcelain Ware.—It is understood in the trade that the new list of prices issued by the Trenton Potteries Company on August 15, and which we print herewith, has been adopted by all the three concerns who are making these goods. The demaud for this class of Sanitary Ware is very much in excess of the production, and it was partly owiug to the fact that the jobbing trade were reaping handsome profits upon the goods by charging premium prices that the potteries decided to recast the list and put them upon a basis which would insure to themselves better prices for the better quality goods.

Solid Porcelain Ideal Ware Bathtubs.

All Roll Rim and Glazed Over the Roll.

	List.
4½-foot French or Roman pattern for feet	$105.00
5 " " " " "	115.00
5½ " " " " "	125.00
6 " " " " "	145.00
6½ " " " " "	165.00
7 " " " " "	190.00
4½ " " " " on base	115.00
5 " " " " "	125.00
5½ " " " " "	140.00
6 " " " " "	160.00
5 " Monarch	150.00
5½ " "	160.00
6 " "	180.00
Porcelain feet, round or square, set of 4	4.00
Nickel plated Bell supply and waste	25.00

Shipping frames for Baths, $3 each, net, extra. When returned in good order, freight prepaid, will be credited at $2 each.

	List.
Seat Bath, all roll rim, pedestal	$50.00
Seat Bath, all roll rim, for feet	40.00
Feet, per set	4.00
Foot Bath, on base	30.00
Foot Bath, on feet	25.00
Feet, per set	4.00
Shower Bath, receptor, 36-inch	55.00
Shower Bath, receptor, 42-inch	80.00
Drinking Fountain, Figure 238-B	12.00
Drinking Fountain, Figure 239-B	14.00
Nickel Plated Outlet Fitting for above	6.00

NOTE.—Feet furnished as they come from kiln at "A" discount only.

Laundry Tubs.

¾ or All Roll Rim.

24-inch	$19.00
26-inch	20.00
29-inch	21.00

Roll Rim with Integral High Back.

26-inch	32.00
29-inch	36.00
Galvanized Iron Standards, complete	6.00
Porcelain Legs, per pair (with metal straps to wall)	9.00

Flat Rim.

	1 Tub.	2 Tubs.	3 Tubs.	4 Tubs.
24-inch	$14.00	$28.00	$42.00	$56.00
27-inch	15.00	30.00	45.00	60.00
29-inch	16.00	32.00	48.00	64.00
Galvanized Legs	3.00	4.50	6.00	7.50
Ash frames	1.50	3.00	4.50	6.00
Ash covers	2.00	4.00	6.00	8.00
Nickel Plated Plugs for Laundry Trays				1.30
Nickel Plated Overflow for Laundry Trays				1.50

NOTE.—Porcelain Legs furnished in "A" and "B" quality only.

Kitchen Sinks.

¾ or All Roll Rim.

Size.	Length outside.	Width outside.	Depth inside.	List.
No. 0	24 inches.	17 inches.	6 inches.	$12.00
No. 1	30 inches.	20 inches.	7 inches.	18.00
No. 2	36 inches.	26 inches.	7 inches.	22.00
No. 3	42 inches.	24 inches.	7 inches.	29.00
No. 4	48 inches.	24 inches.	7 inches.	36.00
Nickel Plated Legs, per pair				10.00
Galvanized Iron Legs, per pair				5.00
White Enamel Painted Iron Legs, per pair				5.50
Bronze Iron Legs, per pair				4.50
Solid Porcelain Legs, per pair, complete with iron braces				12.00

NOTE.—Solid Porcelain Sink Legs sold in "A" and "B" quality only.

Kitchen Sinks.

Roll Rim with Integral High Back.

Size.	Length outside.	Width outside.	Depth inside.	List.
No. 1	30 inches.	21½ inches.	7 inches.	$30.00
No. 2	36 inches.	24 inches.	7 inches.	35.00
No. 3	42 inches.	24 inches.	7 inches.	45.00

Flat Rim.

No. 1	30 inches.	20 inches.	7 inches.	$13.00
No. 2	36 inches.	23 inches.	7 inches.	16.00
No. 3	42 inches.	24 inches.	7 inches.	19.00
No. 4	48 inches.	24 inches.	7 inches.	27.00
Galvanized Legs, per pair				5.50
Nickel Plated Plugs or Strainers for Kitchen Sinks				2.50

Recess Roll Rim Kitchen Sinks.

No. 1	30 inches.	20 inches.	7 inches.	$20.00
No. 2	36 inches.	24 inches.	7 inches.	25.00
No. 3	42 inches.	24 inches.	7 inches.	32.00
No. 4	48 inches.	24 inches.	7 inches.	40.00

Pantry Sinks.

Flat Rim.

Size.	Length outside.	Width outside.	Depth inside.	List.
No. 1	20 inches.	14 inches.	5 inches.	$6.00
No. 2	23 inches.	16 inches.	6 inches.	8.00
No. 3	24 inches.	17 inches.	6 inches.	9.00
No. 4	28 inches.	17 inches.	6 inches.	11.00
No. 5	30 inches.	20 inches.	7 inches.	13.00

Extra Deep.

No. 1	28 inches.	18 inches.	10 inches.	$13.00
No. 2	30 inches.	20 inches.	10 inches.	16.00

Recessed End.

No. 1	24 inches.	17 inches.	6 inches.	$10.00
No. 2	28 inches.	17 inches.	6 inches.	12.00
No. 3	30 inches.	20 inches.	7 inches.	14.00

Pantry Sinks, double drain board, ¾ roll rim, length over all 48 inches, width 18 inches	40 00
Nickel Plated Plugs for Pantry Sinks	1.30
Nickel Plated Overflow Grids	1.50

Slop Sinks.

¾ or All Roll Rim.

Size.	Length outside.	Width outside.	Depth inside.	List.
No. 1	20 inches.	16 inches.	12 inches.	$14.00
No. 2	22 inches.	18 inches.	12 inches.	18.00
No. 3	24 inches.	20 inches.	12 inches.	22.00

Flat Rim.

No. 1	20 inches.	16 inches.	12 inches.	$10.00
No. 2	22 inches.	18 inches.	12 inches.	12.00
No. 3	24 inches.	20 inches.	12 inches.	14.00
Galvanized Iron Legs, per set				4.00
Nickel Plated Brass Legs, per set				14.00
Nickel Plated Strainers for Slop Sinks				4.00

Flushing Rim Slop Sinks.

	List.
22 x 22 inch	$25.00
1½-inch Expansion Coupling, plain	.80
Pedestal Traps	10.00
2-inch Expansion Vent Coupling, plain	1.12
Nickel Plated Strainer, with lock nut	3.00

Lavatories.

	List.
26-inch ¾ Roll Rim, 21 inches wide	$20.00
26-inch Wall Back, 12 inches high	6.00
30-inch ¾ Roll Rim, 22 inches wide	23.00
30-inch Wall Back, 15 inches high	7.00
30-inch Improved, 24 inches wide	30.00
30-inch Wall Back, 16 inches high	8.00
33-inch Improved, 24 inches wide	36.00
33-inch Wall Back, 16 inches high	8.00
Ideal Porcelain Lavatory Legs, with iron back straps, per pair	12.00
Nickel Plated Brass Legs, per pair	10.00
Iron Legs, painted white enamel	5.50
Iron Legs, galvanized	5.00
Iron Legs, bronzed	4.50
No. 1 Elliptical Lavatory, 33 x 22½ inches	30.00
Ideal Porcelain Pedestal	12.00
No. 2 Elliptical Lavatory, 37 x 27 inches	36.00
Ideal Porcelain Pedestal	15.00
Nickel Plated Legs and Frame	28.00
Nickel Plated Legs and Frame, with brass rod parallel to sash	35.00
Straight Back Oval Front, with integral back, 24 x 22 inches	28.00
Car Lavatory, 26 x 30 inches	20.00
Corner Lavatory, integral back, length of side 19½ inches, greatest width 28 inches, corner of wall to front 25 inches	30.00
One Porcelain Leg for Corner, Car or Square Lavatory, complete with wall connections	9.50
One Nickel Plated Leg and Frame for Corner, Car or Square Lavatory	7.50
One Iron Leg and Frame, painted white enamel or galvanized,, for Corner, Car or Square Lavatory	5.50
One Bronzed Iron Leg, for Corner, Car or Square Lavatory	4.50
Large Corner Lavatory, integral back	36.00
Unique Waste, including china Name Plates	6.00
Nickel Plate Overflow Grid and Plug	2.50

NOTE.—Solid Porcelain Lavatory Legs sold in "A" and "B" quality only.

Wall Backs.

	List.
20 x 12 inches, for ¾ Roll Rim Slop Sinks	$4.50
22 x 15 inches, " " " " "	5.00
24 x 15 inches, " " " " "	5.50
24 x 15 inches, " " " Kitchen Sinks	5.50
30 x 15 inches, " " " " "	7.00
36 x 15 inches, " " " " "	8.00
42 x 18 inches, " " " " "	10.00
48 x 18 inches, " " " " "	12.00
26 x 15 inches, " " " Laundry Tubs	6.00
29 x 15 inches, " " " " "	6.50

Boxing and packing, net extra.

Building Papers.—A leading manufacturing company, whose most important field is Chicago, although they have depots in all the principal cities, are quoting the following prices to the trade, f.o.b. Chicago: Red Rosin Sized Sheathing, rolls of 500 square feet, three ply, rolls weighing about 20 pounds each, 30 cents per roll; 25-pound rolls, 38 cents; 30-pound rolls, 45 cents, and 35-pound rolls, 53 cents. Red Rope Roofing, 60-pound rolls, of 500 square feet, $2.75. Asbestos Building Felt, 3½ cents per pound, ton lots. Tarred Felts in light, medium and heavier weights, $1.25 per 100 pounds, and Slaters' Felt, 500 square feet, per roll, 50 cents. Deadening Felts, in which some changes have been made, are now $1.80 and $2 per 100 pounds, ranging from 1 to 1½ pounds per square yard, according to quality. Prepared Roofing Felt, two ply, per roll, 65 cents; three ply, 85 cents. The prices given above are for lots of 25 rolls, smaller quantities ranging from 5 to 10 cents per roll advance.

Chain.—The Chain market is characterized by a decidedly firm tone. This is the result of the large volume of current business and the condition of the iron market. Apprehension of a scarcity of material also contributes to the strength of this line.

Cordage.—A wide range of prices remains a prominent feature in the Rope market. During the early part of July some of the manufacturers made a special effort to clear their warehouses preparatory to stock taking. Thus far this month the demand for all classes of Cordage has improved and those who are busy are not making concessions in prices to secure trade.

Stove Boards.—Owing to the shortage of Sheet Steel and Tin Plate, manufacturers of Stove Boards, other than those made of Zinc, are getting short of stock and are unable to fill orders with any promptness; consequently a scarcity of Stove Boards is a likelihood of the future, together with higher prices on these goods.

Wire Nails.—A satisfactory volume of business is being done. A large number of buildings and improvements are projected or under way and a good fall demand is anticipated. Prices are unchanged, small lots of Wire Nails from store, New York, being quoted at $2.60 per keg.

Cut Nails.—The demand for Cut Nails continues in about former proportions. New York price for small lots from store is $2.18 to $2.25 per keg.

Wire.—There is a good demand for Plain Wire, which absorbs the current output of the mills. Prices are firm. Plain Wire, in small lots, is quoted at 2.60 cents and Galvanized at 3 cents.

Window Glass.—Interest in Window Glass circles is centering about the possibility of the American Window Glass Company controlling the output of the Belgium Window Glass factories, which have been the largest importers of Glass to this country. If the control of the Belgium factories is secured by the American company, or if they succeed in having foreign Glass raised to higher prices than that of American Glass, the home market is likely to remain firm in the near future. The local Window Glass market remains quiet and prices unchanged.

White Lead.—For local consumption the demand for White Lead in Oil is fair. No change in price has taken place, contrary to the anticipations of some of the trade of lower values. It is understood that the recent advance in the price of Mixed Paints is not generally maintained, owing to the drop in the price in Oil, which occurred almost immediately after the advance in Paints was made. Quotations for moderate quantities of White Lead in Oil are 7 cents to 7¼ cents per pound.

Linseed Oil.—Immediate business in Linseed Oil is confined to small lots to cover requirements. Buyers of usually large quantities are purchasing what they require from day to day. The price was reduced 7 cents a gallon on Thursday. City Raw in small lots being quoted at 67 cents to 68 cents per gallon.

Spirits Turpentine.—The local Turpentine market is quiet and demand is confined to small lots. Quotations are unchanged at 37½ cents to 38 cents per gallon.

TRADE NOTES.

THE AMERICAN WIRE WASHER COMPANY, with a capital of $500,000, have been incorporated in Jersey City, N. J., to manufacture Washers from wire. The incorporators are Herbert C. Hart, J. Hardy Kugler and Paul W. Ryder, all of Jersey City.

THE ENERGY ELEVATOR COMPANY, Philadelphia, are manufacturing a new type of Elevator, one used to convey and place in ice baths patients suffering from high fever. One of these was manufactured for a prominent hospital in this city some time ago, and one is now in course of construction for the Pennsylvania Hospital of Philadelphia. The other branches of their Elevator business continue very active, and all departments of the plant are being operated to their best capacity.

THE OHIO MICA COMPANY have recently been organized at Canton, Ohio, and the following officers have been elected: F. Herbruck, president; Edwin Davis, vice-president; H. H. Maher, secretary, and H. R. Banhof, treasurer. The new concern are miners, millers, importers and manufacturers of Mica. A specialty is made of Pulverized, Sheet and Cut Electrical Mica. They also are manufacturers of Mica Chimneys, Canopies, &c.

Durability of Cut and Wire Nails.

In the past issues of the paper there has been more or less discussion as to the relative merits of cut and wire nails, more particularly perhaps in connection with roofs. Some rather interesting comments by a correspondent are to be found in a recent issue of the Mississippi Valley *Lumberman* regarding this question, and from it we quote as follows: While I have been in this place I have had good opportunity to note the lasting qualities of what has now become the old fashioned cut nail. A good many roofs of the old houses are giving out and being reshingled. Standing recently near a house that was being covered, I took up some of the old shingles and examined them and found that where the shingle was sound about the nail hole the nail itself was almost as good as ever, and it struck me then that the life of a cut nail and a white pine shingle was pretty nearly of the same duration. Where the shingle was decayed the nail also was rusted out, and so I concluded that where both the wood and iron were kept dry they were practically indestructible.

When the now common steel wire nail first came out it was generally conceded that they were a great improvement on the old cut nail, and there is no question that they are for general purposes in construction. Their toughness and breaking strain are so much greater than the old kind that the question of their strength and utility admits of no argument, but, as is the case with a good many things, there are some uses for which they are decidedly inferior to the cut nail, and these are where there exists a state of dampness. Common experience and observation go to show that the steel nail is susceptible of being oxidized much quicker than the cut nail. Go over one of your old sidewalks in the town where it has been put down with steel nails and you will find almost invariably that the nail has given out sooner than the wood. This is the cause of so many loose boards in the sidewalk.

It is for this reason that whenever you see a railroad company putting down a new platform at one of their stations you may notice that they use the cut nail instead of the steel article. You may also notice that the spike which is used to fasten the rail down to the tie is practically the same as it always has been and of the same material. If the steel kind were more serviceable you may be sure they would be used for that purpose, as railroad men are given to determining pretty closely what is the most durable in such matters.

Fastening shingles to the roof with wire nails has come to be pretty generally known among observant builders as defective to the making of a good serviceable roof. They have learned this through experience, although it must be said that the great majority of them still keep on using them, and will continue so to do until the public generally becomes advised against them for that purpose. The principal reason for this is no doubt because of their being easier to drive than the old cut nail. Anybody, even a woman, can start and drive a wire nail, but everybody doesn't know how to do the same with a cut nail, because if you do not start the latter just right you will split the wood if you are driving it near the end of the piece. This will be news to some of you youngsters who have come up since the wire nail was first introduced. You ask your father if you've a mind to and he will tell you the same thing.

Two years ago I reshingled my own house and profiting by what I had seen of the wire nail for that purpose, I had my carpenter use the cut nail. He "kicked" about it, but, as I was paying him by the day, it made no difference to him. He contended, like a good many others, that it was not the fault of the nail that it rusted out so quickly, but that the red cedar shingle was the cause. I am aware of the fact that from this idea has arisen a prejudice against this kind of shingles, it being claimed that there is some kind of an acid in the wood that has close affinity for metal and eats it away. Now, without beind rude to any one who holds such an opinion, I will say that I don't believe there is a grain of truth in such an assertion.

I have in my possession some wire nails that were used in putting on white pine siding. They had become so badly rusted that the heads had fallen off, compelling the owner of the building to have the siding entirely renailed. This is not the only instance of the kind I have seen where wire nails have rusted through in white pine siding. This goes to prove that it is not acid that rusts them.

Within the past year or two there has been manufactured a new kind of wire nail which I think will before long come into general use to nail on shingles. It is the galvanized wire nail and has the sharp point and flat head of the common nail that is now used. Their cost is about the same, and may be had at any hardware store in the larger towns. They will keep them in the smaller places also if the carpenters manifest a disposition to ask for them. If the dealers don't care to keep the two stocks of shingle nails, the *Lumberman* could probably prove more effective in getting them into general use by getting a few kegs and keeping them for sale. It won't take much arguing to induce some one who is building a house to buy the better article when there is no difference in the price.

CONTENTS.

	Page.
Editorials—	
Keeping Labor Contracts	41
Pay More Attention to Collections	41
The Vindication of Vandergrift	41
The Scarcity of Sheet Metal	42
Furnace Casings and Piping	43
The Extent of the Mueller Line of Furnaces	43
J Leslie Miller. Portrait	43
Fifty Furnace "Ads."	43
The Walker & Pratt Mfg. Company	44
The Round Oak Year Book for 1901	44
The William Resor & Company	44
The Forbes Furnace for 1901	44
Meeting of Vapor Stove Men	45
Detroit's Bicentenary Celebration. Illustrated	45
Sunshine Stoves and Ranges	45
A Chicago Paper Makes Important Discoveries	46
Odd Plates	46
A Natural Gas Furnace Illustrated	47
Michigan Retail Hardware Dealers' Association	47
Short Methods in Figures	48
The Harrington Tea Percolator Illustrated	48
Rochester Furnace and Sheet Metal Association's Outing	49
Guessing Amount of Sales. Illustrated	49
Pocket Linen Tapes. Illustrated	49
The Gem Mop Head. Illustrated	50
Emmert's Universal Vise Illustrated	50
A Plumbers' Collection Agency	51
The Abner Acetylene Generators	51
Newark, N. J., Plumbers' Outing	51
The Gorton Boilers	51
Thr Novelty Gas Meter Connections. Illustrated	51
Calcium Carbide in Germany	51
The British Institution of Heating and Ventilating Engineers	52
A New Jewel Gas Circulating Water Heater	52
Advanced Plumbing	53
New York Master Plumbers' Outing	53
New York City Notes	54
Heating and Plumbing Notes	54
New Firms and Changes	55
A Royal Kitchen	56
A New Welding Process	56
Aluminum Furniture	56
Warm Weather Houses	56
The Steel Strike	57
Effect of the Steel Strike in Canada	57
American Sheet Steel Company's Improvements	58
Bickelhaupt's Patent Skylight Lift. Illustrated	58
Sheet Metal Ceiling and Siding	58
Flashings	58
The Concentration of Manufacturing Plants	59
The Letter Box—	
Account of Plumbers' Time. Illustrated	60
A Question for the Plumbing Inspector. Illustrated	61
Making a Cellar Water Tight	61
Will a Siphon Work?	61
Setting Horizontal Hot Water Tanks	61
How Should Radiator Be Connected? Illustrated	61
Trade Report—	
Market Summary	62
Metal Market	62
The Pig Iron Market	63
Chicago Report	63
The Hardware Trade	64
Notes on Prices	64
Trade Notes	65
Durability of Cut and Wire Nails	66
Metal and Miscellaneous Prices	67
Labor Exchange—	
Help and Situations Wanted	71

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED AUGUST 23, 1901

The following New York quotations are for small lots:

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots.....₩ lb. 37¢
100-lb lots.....₩ lb. 35¢
Aluminum Sheet, B. & S. gauge.
In lots of 50 lbs or more.

	6-in	14-in.	24-in.
Wider than.....	14-in	24-in.	30-in.
And including.....	₩ lb	₩ lb.	₩ lb.
Nos. 13 to 19.....	$0.42	$0.44	$0.47
" 20.....	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24.....	.46	.50	.53
" 25.....	.47	.51	.54
" 26.....	.47	.54	.59
" 27.....	.48	.57	.62
" 28.....	.48	.57	.64
" 29.....	.49	.60	.69
" 30.....	.50	.64	.77

Note.—Lots of less than 50 lbs 5¢ ₩ lb extra.

Antimony—

Cookson.....₩ lb. 10½@11¢
Hallett's .. ..₩ lb, 8½@9¼¢
U. S.....₩ lb, 8½@9 ¢

Brass—Planished .....net

Roll and Sheet.....15@20% off

Brass and Copper Tubes

Brazed Brass Tubing—

Brown & Sharpe's Gauge the Standard.

List Feb. 26, 1896.

Plain Round Tube.	Per lb.	
¼-in. up to 2-in.....	$0.35	30@35% off.
5-16-in. up to ⅜-in.....	.36	
⅞-in. up to ½ in.....	.38	
⅝-in. up to ⅞ in.....	.41	
5-16-in. up to ⅜-in.....	.48	
½-in. up to 5-16-in.....	.65	
3-16-in. up to ¼-in.....	1.00	
⅛-in. up to 3-16-in.....	1.50	
Smaller than ⅛-in.....	Special	
3-in. and larger.....	Special	
2-in. to 3-in. to No. 19, inclusive.	.38	

Copper & Bronze Tubing—

3¢ ₩ lb more than Brass.

Conductors—

Corrugated. *Round or Square.*—
Galvanized ½ or more. N'st'd.....70&5%
" Not Nested.....70&2½%
" Plain Round, ½ or more, Nested .....70&5%
Galvanized, Plain Round, Not Nested. 70&2½%

Spiral Riveted.
Galvanized 40%
See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—See *Strainers, Conductor.*

Copper—

Lake Ingot..... ...17¼@17⅝¢
Casting..... .....16¾@17 ¢
Sheet and Bolt.....21¢ ₩ lb basis
Cold Rolled Sheets.....22¢ ₩ lb basis
Cold Rolled and Polished Sheets ... . 23¢ basis
Planished Sheets.....24¢ basis
Bottoms, Pits and Flats .....₩ lb 25¢ basis

Eaves Troughs—

List Feb. 1, 1895.
Lap or Slip Joint, Galvanized, in crates 75&10%

Eave Trough Mitres—

Lap or Slip Joint.....list, 25%

Elbows—Plain Adjustable—

Eastern List.
Tin.....30%
Galvanized.....30%
Perfect " Elbows.....40%

Stove Pipe—

Four-Piece.

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz
No. 2.	.65	.70	.75	.80	.85 "
No 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Corrugated

Round or Square.
Galvanized 60%

Gasoline—See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16.....₩ lb	3.75...	3.80¢
Nos. 18 to 21.....₩ lb,	3.85....	3.90¢
Nos. 22 to 24.....₩ lb,	3.95....	4.00¢
Nos. 25 and 26...₩ lb,	4.05....	4.10¢
No. 27 ... .₩ lb,	4.15....	4.20¢
No. 28 .....₩ lb,	4.25....	4.30¢

Russia, Planished, &c.
Genuine Russia, according to assortment.....₩ lb 10½¢
Do. Stained.....6¢@10¢
Patent Planished. ₩ lb A, 9¼¢; B, 8¾¢ net

Galvanized.

Nos. 10 to 16.....₩ lb,	12¢	60% off.
Nos. 17 to 21. .....₩ lb,	13¢	
Nos. 22 to 24.....₩ lb	14¢	
Nos. 25 to 26.....₩ lb,	15¢	
No. 27.....₩ lb,	16¢	
No. 28.....₩ lb,	17¢	
No. 29.....₩ lb,	19¢	
No. 30.....₩ lb,	21¢	

36 in. 1¢ ₩ lb higher

Kerosene—See *Petroleum Products*

Lead—

American Pig..... .....4.60@4.62½¢
Bar..... ...5⅛@5¼
Pipe.....6½¢.....20% off
Tin Lined Pipe.....12½¢.....20% off
Block Tin Pipe .....40¢ .....20% off
Sheet Lead, full rolls... 7¼¢ .....20% off
Sheet Lead, cut.....7¾¢.....20% off
Old Lead in exchange, 1½¢ ₩ lb.

Mitres, Eave Trough—See *Eave Trough Mitres.*

Nickel—

Per lb..... .....60@65¢

Paints, Oils, &c.—

Lead, White, Atlantic and Jewett's, 7¼¢
Lead. Amn. White, in oil..... 7@7½¢
Lead, Red. bbls. and ½ bbls..... 7@7½¢
Lead, Red, kegs.... ..... 7@7½¢
Linseed Oil:
Raw, ₩ gal..... ....66@67¢
Boiled..... .....68@69¢
Spirits Turpentine:
In bbls.....37½@38 ¢
Putty:
In barrels and ½ bbls..... .....2½
In tin cans..... .....3½
In bladders ....2¼¢

Palm Oil. 1500 lb casks.

Fancy Lagos.....₩ lb 6 ¢
Clarified.....₩ lb 5¾¢
Accra .....₩ lb 5½¢
Half Jack .....₩ lb 5 ¼¢

Petroleum Products—

In Barrels (Barrel Included)
Stove Gasoline.....₩ gal. 12½@13¢
Kerosene..... ₩ gal. 13@13½¢

Pipe, Drain..... ....40%

Pipe, Spiral—See *Conductors*

Registers—

List Feb. 1, 1899.
Black Japanned..... 50&10%
White Japanned.....40&10%
Nickel Plated.....50&10%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze..... .....40%
Electroplated in Brass, Bronze or Copper 40%
White Porcelain..... .....20%
Solid Brass and Bronze Metal.....20%

Roofing Material—

Heavy Single Ply Tar Felt,..... ₩ ton $30.00
2 Ply Roofing Felt.....₩ roll, 108 sq. ft. 65¢
3 Ply Roofing Felt....₩ roll, 108 sq. ft. 85¢
Roofing Pitch ₩ bbl.....$2 38

Rosin

(Barrels of 280 lb. Barrels weigh actually about 400 lb).
Common and Good—Strained.

Rosin, C. & D.....₩ bbl.	$1.40	@$1.42
Rosin, E. & F.....₩ bbl.	1.65	@ 1.75
Rosin, G. & H.....₩ bbl.	1.80	@ 1.85
Rosin, I. & K .....₩ bbl.	1.90	@ 2.35
Rosin, M. & N.....₩ bbl.	2.60	@ 3.10

Seamless Brass Tubes—

Net List, February 6, 1899.

Shoes and Elbows—See *Elbows and Shoes.*

Slate Roofing—

According to size, f. o. b. cars, Quarry Station.
Pennsylvania:
Best Bangor, ₩ sqr. .. ...$3.25@$4.50
No. 1 Bangor Ribbon, ₩ sq 3.00@ 3.50
Pen Argyle, ₩ sqr..... 3.00@ 3.75
Peach Bottom, ₩ sqr..... 4.85@ 5.60
No. 1 Boys, ₩ sqr..... 3.35@ 3.55
No 1 Chapman Keystone ₩ sqr..... .. .. 3.25@ 4.25
Vermont:
Sea Green, ₩ sqr.....$2.00@$3.00
Purple, ₩ sqr ..... 3.75@ 4.25
Unfading Green, ₩ sqr... 3.25@ 4.50
Red, ₩ sqr. ..... 6.50@11.00
Maine:
Brownville, Unfading Black:
No. 1 quality..... .....$5.25@7.50
No. 2 quality..... ..$4.25@6.00

Solder—

½&¼ guaranteed.....19@19½¢
No. 1..... .....15 @17½¢
Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Concentrated Soldering Flux.
f. o. b. New York.
In barrels, ₩ lb ... .4¢
Smaller quantities. ₩ lb.....5¢
Eureka Soldering Flux—Triple Strength
In barrels, ₩ lb ..... 3 ¢
Smaller quantities, ₩ lb .....3½¢
Eureka Soldering Flux—Extra Concentrated
In barrels, ₩ lb..... .....4¼¢
Smaller quantities, ₩ lb .....5 ¢
Eureka Soldering Flux—Crystal.
In 100-lb cases, ₩ lb .....7¢
Gedney's Soldering Fluid.
In carboys or barrels, ₩ lb.....2¢
$1.50 for carboy or barrel; money refunded when returned.
Lennox Soldering Fluid.
In barrels, ₩ lb.....2¢
In carboys. ₩ lb .....3¢
Perfection Soldering Flux.
No charge for package.
Bbls. about 500 lb, ₩ lb.....3¢
½ bbls., about 300 lb, ₩ lb.....3½¢
Kegs, about 110 lb, ₩ lb..... .3½¢
Kegs about 55 lb, ₩ lb..... .....4¢
Yager's Soldering Salts.
1 lb bottles each 60%
5 lb bottles, ₩ lb.....40%

Soldering Coppers—

Per lb..... ....22@24¢

Speiter—

Western Speiter.. .....4.45@4½¢

Spiral Pipe—See *Conductors.*

Stove Pipe Elbows—See *Elbows, Stove Pipe.*

Stove Trucks—See *Trucks, Stove*

Strainers, Conductor—

Galvanized..... . . ..50%

Tin Pigs and Bars—

Banca, pigs, ₩ lb..... .....27½@27¾¢
Straits, pigs, ₩ lb.....27¼@27½¢
Straits, in bars, ₩ lb..... .....28 @28½¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.
Calland Grade:

IC,	14 x 20.....	....$8.25
IX,	14 x 20....	9.75
IXX,	14 x 20.....	11.00
IXXX,	14 x 20.....	12.25
IXXXX,	14 x 20.....	13.50

Melyn Grade:

IC,	14 x 20.....	7.75
IX,	14 x 20.....	9.25
IXX,	14 x 20.	.....10.50
IXXX,	14 x 20	...11.75
IXXXX	14 x 20....	13.00

Allaway Grade:

IC,	14 x 20.....	7.25
IX,	14 x 20	8.35
IXX,	14 x 20.....	9.45
IXXX,	14 x 20.....	10.55
IXXXX,	14 x 20.	11.65

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight	IC, 14 x 20.	$7.15@7.25
" "	IX, 14 x 20	$8.00@8.25

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 lb.....	15¢
95 lb.....	20¢
90 lb	25¢
85 lb.....	30¢

Terne Plates—

N. B.—The following prices are for IC, 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 lb coating and $2.50 to $3 00 advance for 15 lb and upward.

About 40 lb coating.....	$18.50@19.00
About 30 lb coating.....	17.75@18.25
About 20 lb coating.....	15.75@16.25
About 15 lb coating.....	13.75@14.25
About 8 lb coating.....	@13.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets).....	$16.00
IXX, 14 x 28..(112 sheets).....	17.00
IXX, 14 x 31..(112 sheets).....	18.50

Troughs Eave—See *Eave Trough*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00
Steel Lock Frame, per doz. 18.00
Daisy Improved pattern, ₩ doz... 18.00

Tubing—

Tin .....50% | Galvanized 50%
Fittings for do.....40%

Zinc—

600 lb casks ₩ lb..... .....6¾¢
Per lb.....7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Fittings—

List of Oct 7, 1899
Cast Iron Fittings, Black and Galvanized, Standard sizes.....60@60&10
Cast Iron Bushings and Plugs....65@66⅔%
Cast Iron Flanges.....65@66⅔%
Malleable Iron Fittings.....45@50%
" " Pushings.....65@66⅔%
" " Unions..... 65@66⅔%
Wrought " Nipples.....65@66⅔%
" " Couplings.....65@66⅔%
" " Long Screws.....65@66⅔%

Cast Iron Soil Pipe—

List Feb. 25, 1901.
2 to 6 inch inclusive.
Standard..... 55&10@60%
Extra Heavy.....65@65&10%
All Fittings..... .....70&5@70&10%

Merchant Wrought Iron Pipe—

List Feb. 15, 1900
Random Lengths.

	Black	Galv
⅛ to ⅜ inch.....4?@50%		85%
½ to 1 inch.....50&10%		40%
11 and 12 inch..... 50%		35%

Extra Strong Pipe—

Random Lengths

	Black	Galv.
⅛ to ¼ in.....	45%	30%
⅜ to 2 in.....	45%	30%
2½ to 8 in.....	45%	30%

Valves Cocks, &c.—

Iron Body Valves.....65&5@70%
Air Cocks and Radiator Air Cocks..... 70@70&5%
Soldering Unions..... .....70@70&5%
" Nipples .....70@70&5%
Brass Unions (Rough and Finished).. 65&5@70%
Jenkins Bros.':
Iron Body Valves, except Gate Valves 55%
All Iron Valves, except Gate Valves.. 40%
Iron Body Gate Valves. 50%
All Iron Gate Valves.... .....35%
Iron Cocks, all Iron.....60&10%
" " with Brass Plugs.....60%
Brass Globe, Angle and Cross Valves.. 65@65&10%
" and Angle Valves, hose outlet.....65@65&10%
Brass Garden Hose Valves...65@65&10%
" Horizontal, Vertical and Angle Check Valves.....65@65&10%
Brass Safety Valves.....55%
" " " Low Pressure....55%
Brass Radiator Valves .....65@65&10%
" " Jenkins 55%
Brass Jenkins' Globe, Angle, Cross and Corner Valves. 55%
Brass Jenkins' Safety and Check Valves..... 40%
Brass Jenkins' Gate Valves..... 50%
Brass Steam Cocks .....65@65&10%
" Gas Meter and Union Meter Cocks .....65@65&10%
Brass Fittings, Rough.... .....65@65&5%
" " Finished.....65@65&5%
" Bushings . .....65@65&10%

Plumbers' Brass Work—

List of December 7, 1896.
Ground Key Work:
Rough Bibs and Stops.....65@65&5%
Finished Bibs..... ....60@00&5%
Rough Stop and Stop and Waste Cocks.....65&5@70%
Rough Stop and Stop and Waste Cocks, Patented.....60@60&5%
Compression Bibs..... .....65@65&5%
" " Flanged .....65&10%
Compression Bath Cocks and Double Bath Cocks..... .....65@65&5%
Compression Basin Cocks .....65@65&5%
Fuller Bibs.....70@70&5%
Fuller Basin Cocks, Nos. 1 to 4.70@70&10%
Fuller Bath Cocks, No. 4½.....$2.25 net
Chain Stays..... .....60@60&5%
Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face....₩ set	$1.00	$1.10
Ground Face..₩ set	$1.05	$1.15

Basin Plugs.... ....60@60&10%
Sink or Bath and Wash Tray Plugs.... 60@60&10%
Basin Clamps .....70@70&10%

Bath Tubs—

Cast Iron Enameled Bath Tubs.
List of March 26, 1900.
Regular Patterns. Guaranteed. Compl eto Line .... 30&10@40%
All High Grade and Special Pattern (except as below).....20%
"Diana" and "Brighton."..... 20%
Non-Guaranteed Brands, complete line 40%
Steel Clad Copper Lined Bath Tubs, list of Feb. 1, 1899.....45@50%
Solid Porcelain Bath Tubs.....20%
Solid Copper, list of Feb. 1, 1899.....20%

Boilers—

Standard Boilers:
30 gal.... .....65@65&10%
35 and 40 gal.....65@6 &5%
Other sizes up to 52 gal....50&10@60%
52 gal. and above.....50&10@60%
Extra Heavy Boilers:
18 to 52 gal ..... 50&10@60%
53 gal. and above..... ...40&10@45%

Sinks—

	Cast Iron—Black	Galv.
Sinks, Square, Half Round and Corner	50&5%	50&10@60%
Sink Legs. ....50&5%		50&10@60%
Sink Backs..... ...50&5%		50&10@60%

Wrought Steel—

New Era, Galv'd and Enameled. .. 70&5%
New Era, Painted.....50&10%
L. & G.....50%

Miscellaneous—

Earthenware, List of Aug. 15, 1901.... Basins, Urinals and Hoppers.....40%
Closet Bowls, Sundries, Washouts and Pedestals.....40%
Drawn Lead Traps, List of June 3, 1901.....40@40&10%

CLASSIFIED LIST OF ADVERTISERS.

Acetylene Gas Generators.
International Heater Co., Utica, N. Y.

Agate Nickel-Steel Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.

Aluminum Ingots.
Janney, Steinmetz & Co., Phila., Pa.

Aluminum Scrap Buyers.
Janney, Steinmetz & Co., Phila., Pa.

Aluminum Sheets.
Janney, Steinmetz & Co., Phila., Pa.

Architectural Ornaments.
Edwards Mfg. Co., Covington, Ky.
Friedley & Voshardt, Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.

Ball Cocks
Foster, F. W. Mfg. Co., Boston, Mass.

Black Plates.
American Tin Plate Co., New York.

Boilers, Range.
Koven, L. O. & Bro., 50 Cliff St., N. Y.

Brass Goods
Jenkins Bros., 71 John St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Brass Sheets, Rolls, &c.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N.Y.

CanMakers' Toolsand Machines.
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.
Toledo Machine & Tool Co., Toledo, O.

Castings, Iron.
Cheney, S. & Son, Manilus, N. Y.

Ceilings, Metallic.
Berger Mfg. Co., Canton, O.
Brooklyn Metal Ceiling Co., Brooklyn, N. Y.
Canton Steel Roofing Co., Canton, O.
Dowman Mfg. Co., Atlanta, Ga.
Eller, J. H. & Co., Canton, O.
Friedley & Voshardt, Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Cellar Drainers.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Coal Vases.
Cincinnati Stamping Co., Cincinnati, Ohio.

Coils.
National Pipe Bending Co., New Haven, Conn.

Conductor Pipe and Elbows.
Berger Bros. Co., Philadelphia, Pa.
Clark, Quien & Morse, Peoria, Ill.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
McClure & Co., Pittsburgh, Pa.
Marlin & Co., Pittsburgh, Pa.

Copper, Roofing and Cornice.
Gnmmey, McFarland & Co., Phila., Pa.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N.Y.

Cornice Machinery.
Donbie Truss Cornice Brake Co., Buffalo, N. Y.
Dreis, Andrews & Krump, Chicago, Ill.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Rowinson, J. M. Mfg. Co., Cincinnati, Ohio.

Cornice Work, Galvanized Iron.
Garry Steel & Iron Co., Cleveland, O.
Marlin & Co., Pittsburgh, Pa.

Couplings. *(See Pipe Couplers.)*

Cresting.
Watson, Jas. H. Est., Crawfordsville, Ind.

Cut Offs, Rain Water.
Cooney & Geiger, Indianapolis, Ind.

Damper Clips.
Brohard Co., Phila., Pa.

Dampers.
Greene, W. F., Est. of, Troy, N. Y.
Howes, S. M. Co., Boston, Mass.
Stover Mfg. Co., Freeport, Ill.
Troy Nickel Works, Troy, N. Y.

Dash Lamps.
Dietz, R. E. Co., New York.

Die Stocks.
Curtis & Curtis Co., Bridgeport, Ct.

Drop Hammers.
Bliss, E. W. Co., Brooklyn, N. Y.
Toledo Mach. & Tool Co., Toledo, O.

Dumb Waiters.
Energy Elevator Co., Phila., Pa.

Eave Troughs.
Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Co., Canton, O.
Clark, Quien & Morse, Peoria, Ill.
Eller, J. H. & Co., Canton, O.
Marlin & Co., Pittsburgh, Pa.
Watson, Jas. H. Est., Crawfordsville, Ind.

Eave Trough Hangers.
Berger Bros. Co., Phila., Pa.
Berger Mfg. Co., Canton, O.
Watson, Jas. H. Est., Crawfordsville, Ind

Eave Trough Machines.
Marlin & Co., Pittsburgh, Pa.

Elbows, Stove Pipe.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
Reeves Mfg. Co., Canal Dover, O.

Electric Dynamo Machines.
Hanson & Van Winkle Co., Newark, N. J.
Zucker & Levett & Loeb Co., 526-530 W. Twenty-fifth St., New York.

Enameled Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., New York,
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Faucets.
Clark Novelty Co., Rochester, N. Y.
Litchfield, J. M., 105 Beekman St., N Y

Fire Brick.
Newton, W. M., Albany, N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Pots.
Burgess Soldering Furnace Co., Columbus, Ohio.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Fire Sets.
Troy Nickel Works, Troy, N Y.

Flue Stoppers.
Stuber & Kuck, Peoria, Ill.

Furnace Cement.
Colebrook, W. H. Sons & Co., Syracuse, N. Y.
Perkins, J. L. & Co. Chicago.

Furnace Pipe and Fittings.
International Heater Co., Utica, N. Y.
Meyer, F. & Bro. Co., Peoria, Ill.
Osborn, J. M. & L. A., Cleveland, O.
Safety Furnace Pipe Co., Detroit, Mich.
Schaffer, Jno. P., Pittsburgh Pa.

Furnaces and Heaters.
Amer. Furnace Co., St. Louis Mo.
Barstow Stove Co., Providence, R.I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Brien Heater Co., Hoosick Falls, N. Y.
Co-operative Foundry Co., Rochester, N. Y.
Danville Stove & Mfg. Co., Danville, Pa.
Dean Boiler Co., Boston, Mass.
Dighton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Royersford, Pa.
Forest City Fdry. & Mfg. Co., Cleveland, Ohio.
Graff Furnace Co., 208 Water Street, New York.
Hart & Crouse Co., Utica, N. Y.
Howes, S. M. Co., Boston, Mass.
International Heater Co., Utica, N. Y.
Keeley Stove Co., Columbia, Pa.
Kelsey Furnace Co., Syracuse, N. Y.
Lennox Machine Co., Marshalltown, Iowa.
Magee Furnace Co., Boston, Mass.
March-Brownback Stove Co., Pottstown, Pa.
Meyer, F. & Bro. Co., Peoria, Ill.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
Noyes & Nutter Mfg. Co., Bangor, Maine.
Prizer-Painter Stove & Heater Co., Reading, Pa.
Richmond Stove Co., Norwich, Conn
Schaffer, John P., Pittsburgh, Pa
Schwab, R. J. & Sons Co., Milwaukee, Wis.
Sheppard, Isaac A. & Co., Phila., Pa.
Stamford Foundry Co., Stamford, Ct.
Stanton Heater Co., Martins Ferry, O.
Tubular Heating and Ventilating Co., Phila., Pa.
Wood & Bishop Co., Bangor, Me.
XXth Century Heating & Ventilating Co., Akron, O.

Gas Heaters. *(See Stoves and Ranges, Gas.)*

Gas Machines.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Granite Steel Ware.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Groovers.
Wheeler, W. A., Indianapolis, Ind.

Heaters, Steam and Hot Water.
Barstow Stove Co., Providence, R.I.
Boynton Furnace Co., 207 Water St., N. Y.
Dean Boiler Co., Boston, Mass.
Dighton Furnace Co., Taunton, Mass.
Drake, W. H., Newark, N. J.
Gorton & Lidgerwood Co., 96 Liberty St., New York.
Gurney & Co., Boston, Mass.
Gurney Heater Mfg. Co., Boston, Mass.
Hart & Crouse Co., Utica, N. Y.
International Heater Co., Utica, N Y.
Kewanee Boiler Co., Kewanee, Ill.
Magee Furnace Co., Boston, Mass.
National Pipe Bending Co., New Haven, Conn.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
Prizer-Painter Stove & Heater Co., Reading, Pa.
Richmond Stove Co., Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith, H. B. Co., Westfield, Mass.
Smith & Anthony Co., Boston, Mass.
Smith & Thayer Co., Boston, Mass.
Stolz, Frank D., Chicago, Ill.
Vance Boiler Works Geneva N. Y.

Hip Shingles.
Galesburg Cornice Works, Galesburg, Ill.

Hollow Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.
National Enameling & Stamping Co., 78 Beekman St., N. Y.
Sperry, D. R. & Co., Batavia, Ill.

Hose Couplings.
Meilink Mfg. Co., Toledo, O.

Hotel Cooking Apparatus.
Smith & Anthony Co., Boston, Mass.

Household Specialties.
Shepard, Sidney & Co., Buffalo, N. Y.
Silver & Co., New York.

Ice Cream Dishers.
Clad, V. & Sons, Phila., Pa.
Seavey Mfg. Co., Boston, Mass.

Iron, Galvanized Sheet. *(See Sheets, Galvanized.)*

Iron and Steel, Sheet. *(See Sheets, Iron and Steel.)*

Iron, Planished Sheet.
Amer. Sheet Steel Co., New York.

Iron Shutters and Doors.
Garry Steel & Iron Co., Cleveland, O.

Lamps.
Dietz, R. E. Co., New York.

Lanterns.
Dietz, R. E. Co., New York.

Lath, Metallic.
Schratwiesers Metal Lath Works.

Lead Pipe.
Colwell Lead Co., 63 Centre St., N. Y.

Lead Washers.
Littleford Bros., Cincinnati, O.

Lightning Rods.
Washburne, E. G. & Co., 46 Cortlandt St., N. Y

Lunch Boxes.
Seavey Mfg. Co., Boston, Mass.

Metal Ceilings. *(See Ceilings, Metallic.)*

Mica.
Munsell, Eugene & Co., 218 Water St., New York.
Palermo Mica Co., 115 Beekman St., N. Y.

Milk Cans.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Nickel Plating Outfits.
Hanson & Van Winkle Co., Newark N. J.
Zucker & Levett & Loeb Co., 526-530 W. Twenty-fifth St., New York.

Oil Heaters. *(See Stoves and Ranges, Oil, Vapor and Gasoline.)*

Ovens, Portable.
Blodgett, G. S. Co., Burlington, Vt.
Howes, S. M. Co., Boston, Mass.

Paint.
Connors, Wm. Paint Mfg. Co., Troy, N. Y.

Patent Solicitors.
Hamlin, G. R., Washington, D. C.
Howson & Howson, Philadelphia, Pa.
Stocking, E. B., Washington, D. C.

Patterns.
Cope, Geo. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, Ohio.
Vedder Pattern Wks., Troy, N. Y.

Perforated Sheet Metal.
Harrington & King Perforating Co., Chicago, Ill.

Pig Iron.
Wister, L. & R. & Co., Philadelphia, Pa.

Pipe Cutting and Threading Machines.
Livermore, H. F., Boston, Mass.

Pipe Couplers.
New Haven Novelty Machine Co., New Haven, Conn.

Pipe, Water and Gas.
Millar, C. & Son Co., Utica, N. Y.

Pipe Fittings
Vanderman Plumbing & Heating Co., Wilmantic, Conn.

Pipe Joints.
Estabrook's Sons, R., Boston, Mass.

Pipe Joint Cement.
Callahan, Geo. & Co., 218 Front Street, N. Y.

Pipe, Lined.
Lamb & Ritchie, Cambridge, Mass.

Pipe Wrenches.
Trimont Mfg. Co., Roxbury, Mass.

Plumbers Tools, Specialties and Supplies.
Barstow Stove Co., Providence, R. I.
Clayton & Lambert Mfg. Co., Detroit, Mich.
Colwell Lead Co., 63 Centre St., N. Y.
Estabrook's Sons, R., Boston, Mass.
Foster, F. W. Mfg. Co., Boston, Mass.
Lamb & Ritchie, Cambridge, Mass.
National Pipe Bending Co., New Haven, Conn.
New Haven Novelty Machine Co., New Haven, Conn.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
Vanderman Plumbing & Heating Co., Willimantic, Conn.
Young, Jos H., Boston, Mass.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Pokers and Lifters.
Stover Mfg. Co., Freeport, Ill.
Troy Nickel Works, Troy, N. Y.

Potato Masher.
Vogel, Wm. & Bros., 37 to 47 S. 9th St., Brooklyn, N. Y.

Presses and Dies.
American Hardware Mfg. Co., Ottawa Ill.
Bliss, E. W. Co., Brooklyn, N. Y.
Garvin Machine Co., 257 Spring Street, New York.
Gordon, W. J., Philadelphia, Pa.
Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Swaine, F. J. Co., St. Louis, Mo.

Punching Machines.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Garvin Machine Co., 257 Spring Street, New York.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Toledo Mach. & Tool Co., Toledo, O.

Radiator Pedestals.
Atlas Radiator Pedestal Co., New London, Conn.

Radiators, Hot Air.
Burton, W. J. & Co., Detroit, Mich
Castle, Wilmot & Co., Rochester, N.Y.
Independent Register Co., Cleveland, Ohio.
Rochester Radiator Co., Rochester, N. Y.

Radiators, Steam and Hot Water.
Gurney Heater Mfg. Co., Boston, Mass.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.

Range Boilers.
Koven, L. O. & Bro., 50 Cliff St., N. Y.

Reflectors.
Frink, I. P., 551 Pearl St., New York.

Registers.
Canton Steel Roofing Co., Canton, O.
Dighton Furnace Co., Taunton, Mass.
Independent Register Co., Cleveland, Ohio.
Seavey Mfg. Co., Boston, Mass.

Roofing.
Asphalt Ready Roofing Co., 136 Water St., N. Y

Roofing Cement and Paint.
Callahan, Geo. & Co., 218 Front Street, N. Y.
Connors, Wm. Paint Mfg. Co., Troy, N. Y.
Dixon, Jos. Crucible Co., Jersey City, N. J.
Perkins, J. L. & Co., Chicago.

Roofing and Siding, Iron and Steel, Corrugated and Plain.
Berger Mfg. Co., Canton, O.
Burton, W. J. & Co., Detroit, Mich.
Canton Steel Roofing Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Garry Steel & Iron Co., Cleveland, O.
Gumney, McFarland & Co., Phila., Pa.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Roofing Nails.
Salem Nail Co., 279 Pearl St., N.Y.

Roofing Slate.
Auld & Conger, Cleveland, O.
Bray, J. & Co., E. Bangor, Pa.
Galt, John & Sons, 253 Broadway, N.Y.
Gunnine Bangor Slate Co., Easton, Pa.
Johnson, E. J. & Co., 38 Park Row, N.Y.
O'Halloran & Jacobs, Pittsburgh, Pa.

Sashes, Metal.
Smith-Warren Co., Boston, Mass.

Schools and Colleges.
International Correspondence Schools, Scranton, Pa.

Screens.
Harrington & King Perforating Co., Chicago, Ill.

Shears, Sheet Metal
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.

Sheet Metal Machinery.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Excelsior Tool & Mch. Works, St. Louis, Mo.
Garvin Machine Co., 257 Spring Street, New York.
Keene, Geo. C. & Co., Cincinnati, O.

SEE ALPHABETICAL INDEX, PAGE 70.

Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.
Swaine, F. J. & Co., St. Louis, Mo

Sheets, Galvanized.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O.
Taylor, N. & G. Co., Philadelphia, Pa.
Wood Alan Co., Philadelphia, Pa.

Sheets, Iron and Steel.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Taylor, N. & G. Co., Philadelphia, Pa.
Wood Co., Alan Philadelphia, Pa.

Shingles and Tiles, Metallic.
Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.

Shot.
Colwell Lead Co., 63 Centre St., N. Y.

Siding. *(See Roofing and Siding.)*

Sinks.
Lalance & Grosjean Mfg. Co., 19 Cliff St., New York.

Skylights.
Canton Steel Roofing Co., Canton, O.
Drouve, G. Co., Bridgeport, Conn.
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Follansbee Bros. Co., Pittsburgh, Pa.
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Smith-Warren Co., Boston, Mass.

SEE ALPHABETICAL INDEX, PAGE 70.

THE METAL WORKER.

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DAVID WILLIAMS COMPANY, Publishers.

232, 234, 236 and 238 William Street, NEW YORK. 805 Fisher Building, CHICAGO.

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LONDON OFFICE: Hastings House, Norfolk Street, Strand.

AUSTRALIAN OFFICES: Melbourne, Hardware Chambers, 231 Elizabeth Street; Sydney, Paling's Buildings.

Remittances should be made by draft, payable to the order of DAVID WILLIAMS COMPANY, on any banking house in the United States or Europe, or by P. O. Money Order on New York. When these cannot be obtained, postage stamps of any country will be received.

Newsdealers or Booksellers in any part of the world may obtain *The Metal Worker* through The American News Company, New York, U. S. A.; The International News Company, New York, U. S. A., and London, England; or The San Francisco News Company, San Francisco, Cal., U. S. A.

Entered at the Post Office, New York, as Second-class Matter.

ALPHABETICAL LIST OF ADVERTISERS.

Adam, W. J. 86
Adler, H. Co. 10
American Furnace Co. 26
American Hardware Mfg. Co. 84
American Sheet Steel Co. ....1&80
American Tin Plate Co. 80
Asphalt Ready Roofing Co .. 81
Atlas Radiator Pedestal Co... 80
Auld & Conger 76
Ayling Bros. 32
Barstow Stove Co. 88
Beckwith, P. D., Est. of 2
Berger Bros. Co. .....32&77
Berger, L. D. 83
Berger Mfg. Co 82
Bergstrom Bros. & Co. 19
Bertsch & Co. .....72&86
Bliss, E. W. Co. 86
Blodgett, G. S. Co. 27
Boynton Furnace Co. 6
Brand Stove Co 25
Bray, J. & Co. 76
Bridgeport Crucible Co. 35
Bridgeport Stove Works. 31
Brien Heater Co. 30
Brohard Co. 32
Brooklyn Metal Ceiling Co. 78
Bruce & Cook. .....81&88
Burgess Soldering Furnace Co. 37
Burton, W. J. & Co. 78
Callahan, Geo. & Co. 77
Canton Steel Roofing Co. 88
Castle, Wilmot & Co. 26
Cheney, S. & Son 1
Cincinnati Stamping Co. ....30&84
City Forge & Iron Works. 33
Clad, V. & Sons, Inc. 27
Clark, Henry N. Co. 31
Clark Novelty Co. 75
Clark, Quien & Morse. 79
Clason Arch. Metal Works... 76
Clayton & Lambert Mfg. Co.. 38
Clough, R. M. 87
Colebrook, W. H. Sons & Co. 34
Colwell Lead Co. 38
Connors, Wm. Paint Mfg. Co. 75
Cooney & Geiger. 7
Co-operative Foundry Co. .20&21
Cope, Geo. W 88
Cortright Metal Roofing Co... 83
Crosby Steam Gage & Valve Co. 1
Crown Ventilator Co. 77
Curtis & Curtis Co. 87
Dangler Stove & Mfg. Co. 27
Danville Stove & Mfg Co. 14
Dean Boiler Co. 27
Detroit Stove Works. 11
Dietz, R. E. Co. 74
Dighton Furnace Co. .....1&22
Dixon, Jos. Crucible Co. 31
Double Truss Cornice Brake Co 84
Dowman Mfg. Co. 77
Drake, W. H. 24
Dreis, Andrews & Krump. 85
Drouve, G. Co. 83
Eclipse Stove Co. 11
Edwards, J. H. 38
Edwards Mfg. Co. 83
Eller, J. H. & Co. 88
Energy Elevator Co. 37
Enterprise Stove Co. 10
Esterbrook's, R. Sons. 37
Excelsior Stove Mfg Co. 11
Excelsior Tool & Mch. Wks.. 84
Fanner Mfg. Co. 32
Feun, Geo. E. 77
Floyd, Wells & Co. 25
Follansbee Bros. Co. 1
Forest City F'dry & Mfg. Co.. 24
Foster, F. W Mfg Co. 38
Friedley & Voshardt. 82
Frink, I. P. 88
Fuller & Warren Co. 1
Galesburg Cornice Works.... 84
Galt, John & Sons. 76
Garry Steel & Iron Co. 81
Garvin Machine Co 84
Genuine Bangor Slate Co. 76
Gerock Bros. Mfg. Co. 77
Globe Ventilator Co. 77
Gobeille Pattern Co. 32
Gordon, W. J. 87
Gorton & Lidgerwood Co. 1
Graff Furnace Co. 6
Greene, W. F., Est. of. 34
Gummey, McFarland & Co... 79
Gunster & Forsyth. 37
Gurney & Co. 11
Gurney Heater Mfg. Co. 25
Hamlin, G. R. 76
Hanson & Van Winkle Co. 36
Harrington & King Perforating Co. 70
Hart & Crouse Co. 19
Hessler, H. E. Co. 35
Hoffman, Geo. W. 33
Howes, S. M. Co. .....18, 32&33
Howson & Howson 73
Hungerford, U. T., Brass & Copper Co. 87
Independent Register Co. 27
International Correspondence Schools. 73
International Heater Co. 3
Janney, Steinmetz & Co. 76
Jenkins Bros. 1
Johnson, E. J. & Co. 76
Keeley Stove Co. 10
Keene, Geo. C. & Co 87
Kelsey Furnace Co. 40
Kemp, C. M. Mfg. Co. 36
Kewanee Boiler Co. 22
Kieley & Mueller. 1
Koven, L. O. & Bro. 38
Lalance & Grosjean Mfg. Co.. 75
Lamb & Ritchie. 38
Lawrence-Letts Elbow Co.... 34
Lennox Machine Co. 27
Litchfield, J. M. 75
Littleford Bros. 78
Livermore, H. F. 37
McClure & Co. 88
McLeod & Henry Co. 1
Magee Furnace Co 1
March-Brownback Stove Co. 28&29
Marcy Stove Repair Co. 35
Marlin & Co. 82
Marston, I. G. & Co. 88
Mellink Mfg. Co. 36
Meurer Bros. Co. 79
Meyer, F. & Bro. Co 25
Michigan Stove Co. .....4&5
Millar, Chas. & Son Co. 88
Miner & Peck Mfg. Co 38
Montross Metal Shingle Co.... 81
Morgan & Co. 37
Mueller, L. J. F'ce Co. 16
Munsell, E. & Co. 33
National Enameling & Stamping Co. 40
National Pipe Bending Co.... 24
New Haven Novelty Machine Co 38
Newton, Wm. M. 1
New York Iron Roofing & Corrugating Co. 79
New York Trade School. 72
Niagara Machine & Tool Wks. 85
Noyes & Nutter Mfg. Co. 24
O'Halloron & Jacobs. 76
Ohl, Geo. A. & Co. 86
Osborn, J. M. & L. A 81
Ostrander, W. R. & Co. 73
Palermo Mica Co. 33
Peck, Stow & Wilcox Co. 85
Perkins, J. L. & Co. 35
Phila. Machine Tool Co. 85
Pierce, Butler & Pierce Mfg. Co. 30
Pittsburgh Stove & Range Co. 8
Portsmouth Stove & Range Co. 23
Presbrey Stove Lining Co. 35
Prizer-Painter Stove & Heater Co. 23
Rasner & Dinger. 83
Rathbone, Sard & Co. .....12&13
Reeves Mfg. Co. 78
Resor, Wm. & Co 8
Rhodes, L. E. Co. 36
Richmond Stove Co. 31
Ringen Stove Co. 7
Robinson, J. M. & Co. 87
Rochester Radiator Co. 26
Rutland Fire Clay Co. 34
Sackman, F. A. 73
Safety Furnace Pipe Co. 31
Salem Nail Co. 77
Sanborn, John. 81
Saunders', D. Sons. 37
Schaffer, John P. 31
Schratwiesers Metal Lath Works. 81
Schwab, R. J. & Sons Co. 22
Schwerdtle Stamp Co. 76
Seavey Mfg. Co. 30
Shepard, Sidney & Co. 36
Sheppard, Isaac A. & Co. 1
Silver & Co. 73
Smith, H. B. Co. 17
Smith & Anthony Co. 88
Smith & Thayer Co 26
Smith-Warren Co. 78
Special Notices. 72
Sperry, D. R. & Co. 73
Stamford Foundry Co 30
Standard Lighting Co. 9
Stanton Heater Co. 19
Stiles & Parker Press Co. 86
Stocking, E. B. 78
Stolz, Frank D. 24
Stover Mfg. Co 32
Stuber & Kuck. 33
Swaine, F. J. Co. 85
Taylor Co., N. & G. 88
Tinnerman Steel Range Co.. 27
Toledo Mch. & Tool Co. 85
Townley, H. P. 72
Trimont Mfg. Co. 86
Troy Nickel Works. 38
Tubular Heating & Ventilating Co. 18
Union Mfg. & Specialty Co .. 86
Valentine, M. D. & Bro. Co... 85
Vance Boiler Works. 24
Vanderman Plumbing & Heating Co. 38
Vedder Pattern Works. 38
Vogel, William & Bros 73
Vulcan Metal Refining Co.... 72
Vulcan Western Co. 72
Walker & Pratt Mfg. Co. 9
Washburne, E. G. & Co. .....77&78
Watson, Jas. H. Est. 84
Wayne, Anthony Mfg Co.... 73
Weir Stove Co. 88
Weiss, H & Co. 85
What Cheer Stove Co. 10
Wheeler, W. A. 84
Wister, L. & R. & Co 88
Wood & Bishop Co. 30
Wood, Alan Co. 81
XXth Century Heating & Ventilating Co. 15
Young, Jos. H. 38
Zero Valve & Brass Mfg. Co.. 37
Zucker & Levett & Loeb Co.. 36

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LIVE TRAVELER who visits wholesale plumbing and hose goods trade, to handle our lawn sprinklers as a side line. "Manufacturer," care *The Metal Worker,* New York. Aug. 24

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Two good TINNERS who can do iron pipe work and jobbing in country shop; write, stating age, experience and wages expected; will give a steady job to the right men. Wm. Horsewood, Girardville, Pa. Aug. 24

A good TINSMITH and SHEET METAL WORKER for inside and outside work and general jobbing; a steady position to the right man. Silsby & Johnson Company, Newport, N. H. Aug. 24

A good, sober and reliable PLUMBER; one who can do steam and gas fitting; reference required. D. H. Williams, 165 Clinton street, Schenectady, N. Y. Aug. 24

A FOREMAN for tin shop employing about 15 hands; must be competent to lay out work and make estimates on sheet metal work, slate and tin roofing, furnace work; must have had experience in managing men and be of good address. Address, with references, "Columbia," care *The Metal Worker,* New York. Aug. 24

A good TINSMITH and an all around man for a hardware store; must be honest and temperate; good reference must be furnished. H. H. Dutton, Burlington Flats, N. Y. Aug. 24

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A good, sober TINNER between 28 and 35 years of age wanted; experienced in roofing, shop jobbing, cistern, pump work, &c.; fair wages paid; give references. Schroeder Bros., St. Paul, Minn. Aug. 17

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A PLUMBER with plenty of experience, good reference and habits; would like one that has some tin and furnace work experience; correspondence solicited at once. Taylor Bros., Adrian, Mich. Aug. 17

At once, five or six first-class TINSMITHS; men accustomed to cornice work preferred. Apply at once to E. H. Friedrich, Holyoke, Mass. Aug. 17

SLATER and TINNER; state wages required and experience to Blowers & Smith, 252 West Main street, Springfield, Ohio. Aug. 17

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A TIN and SHEET METAL WORKER would like a job in tin and sheet iron shop; ten years' experience; sober; would like a situation in Massachusetts or Maine. Box 22, Maitland, Hants County, Nova Scotia. Aug. 24

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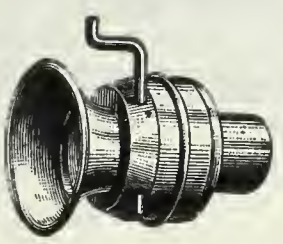

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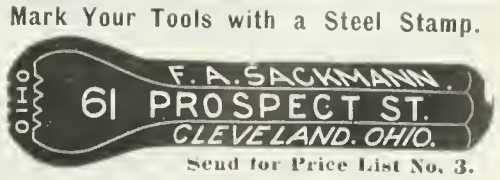

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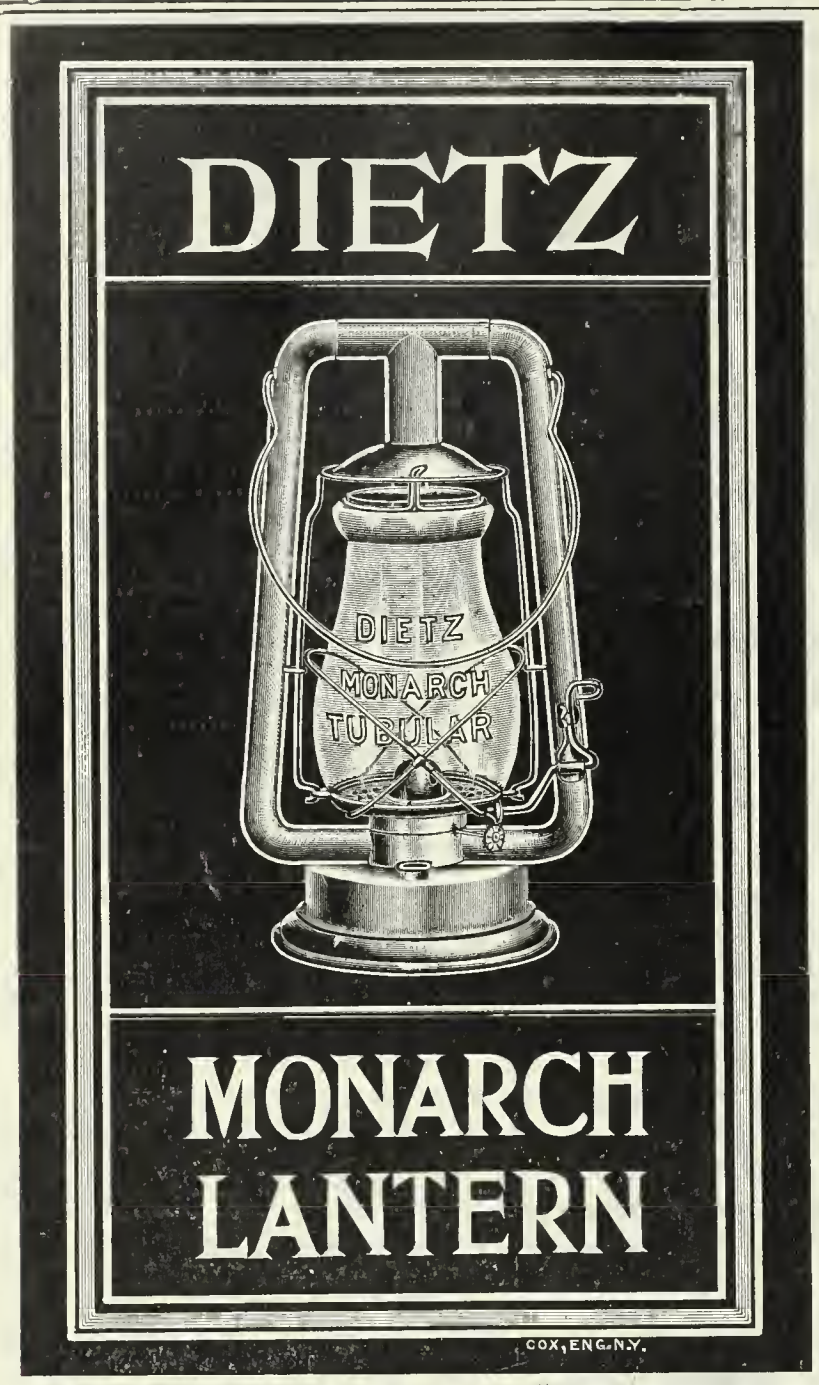

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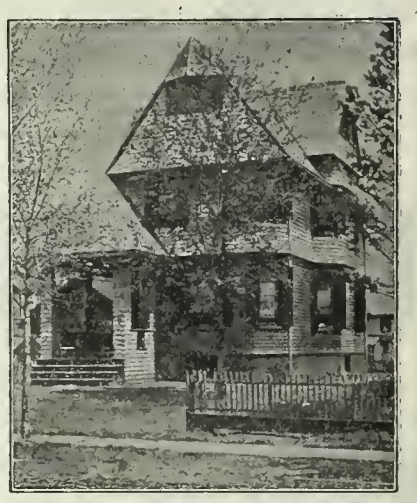

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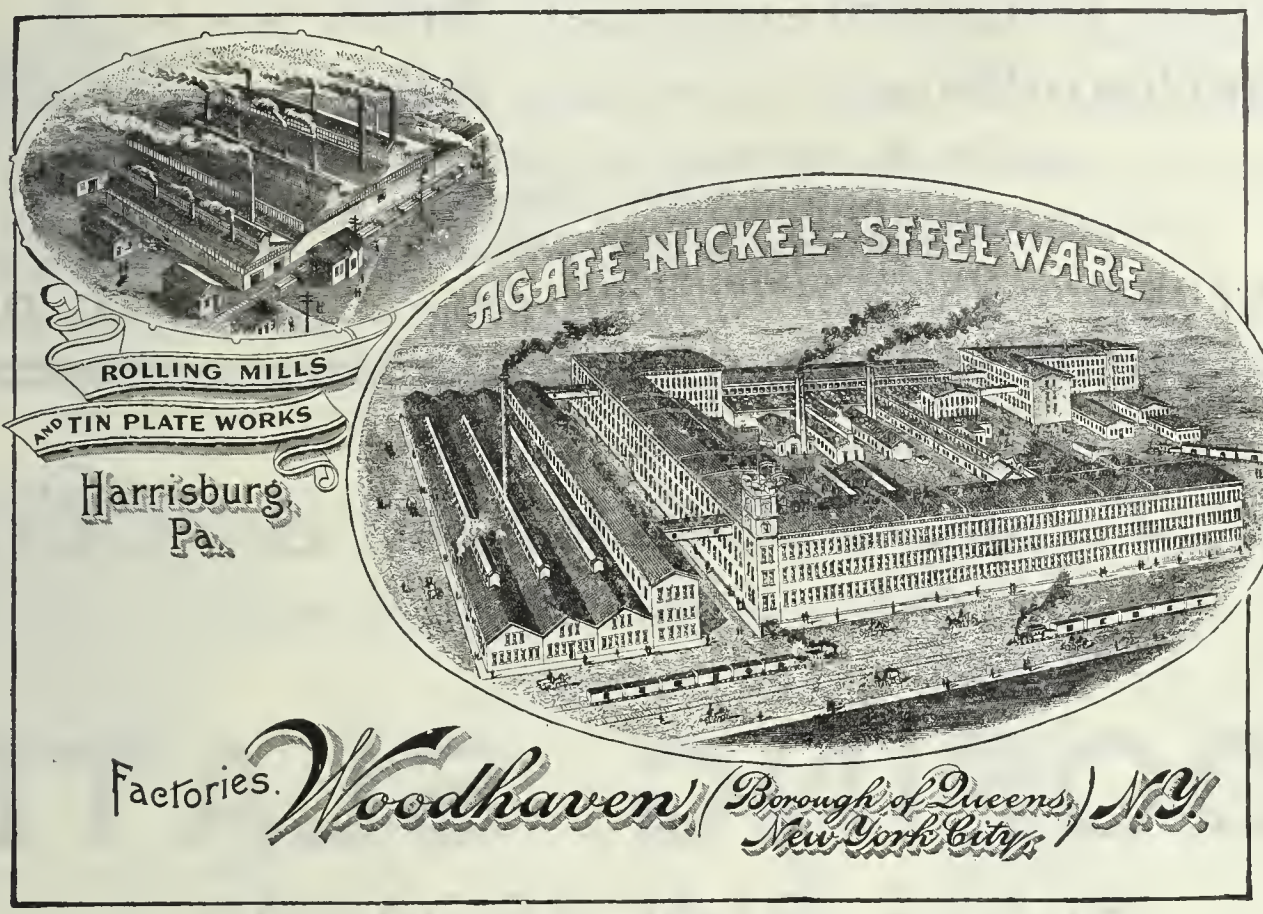
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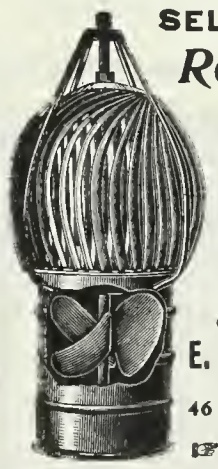

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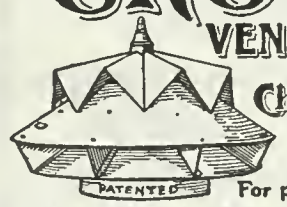

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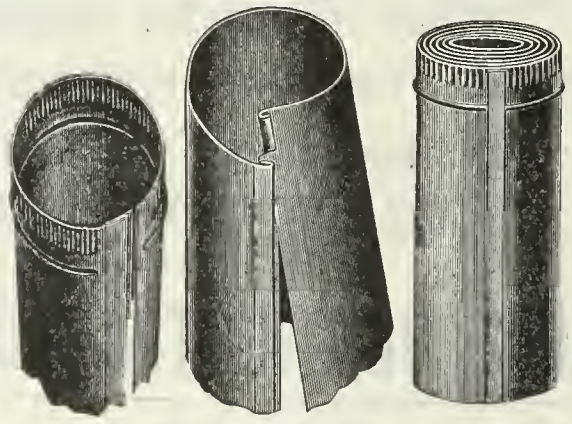

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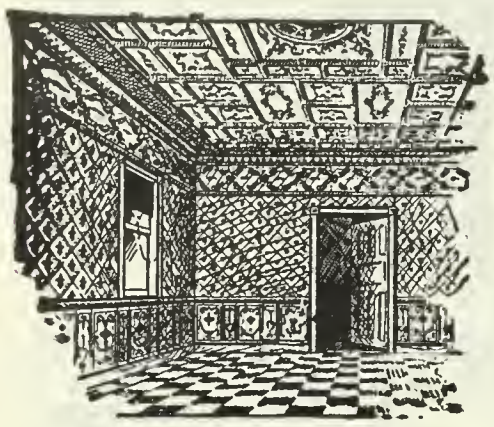

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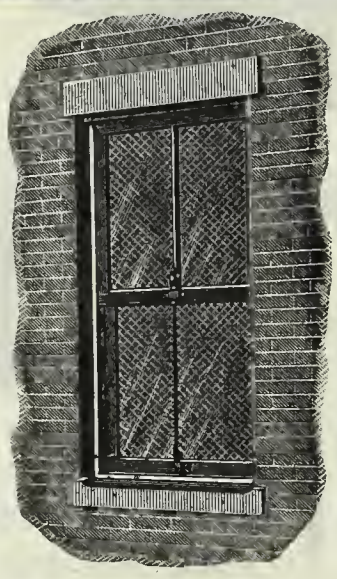

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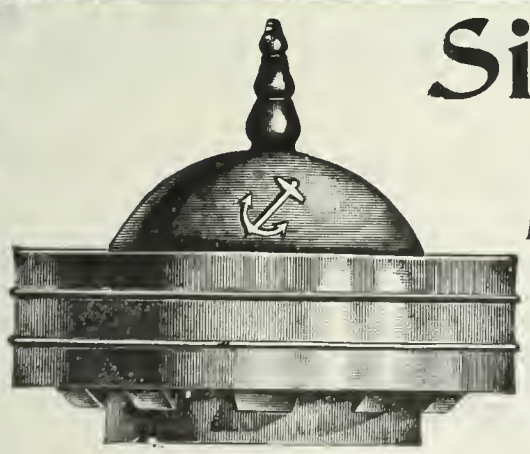

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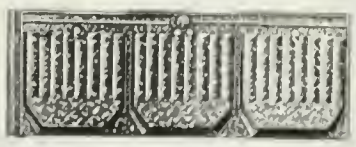

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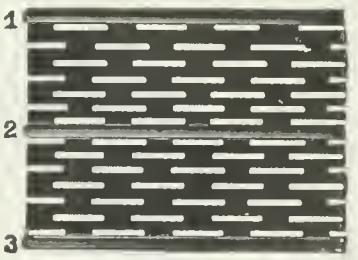

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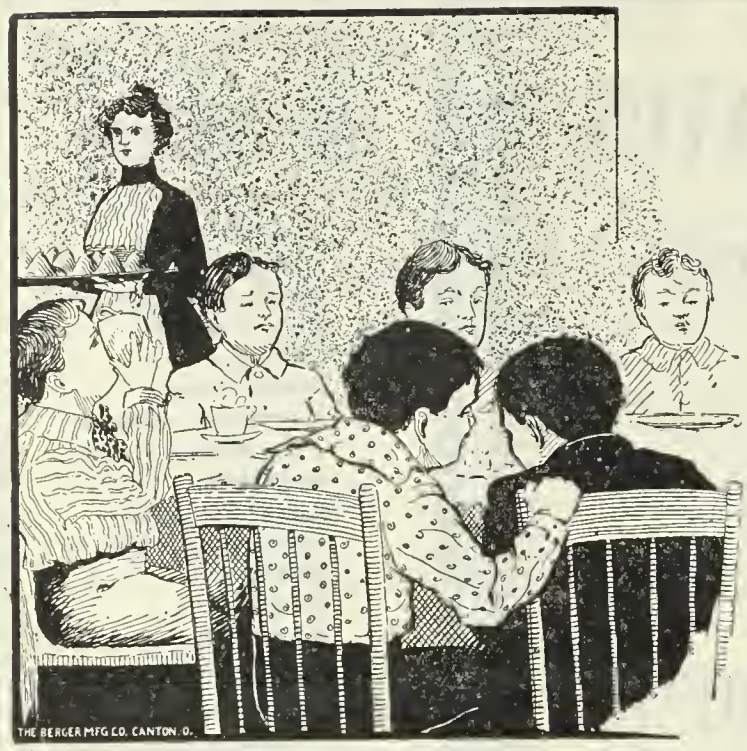

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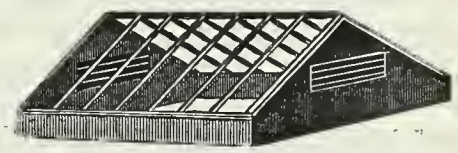

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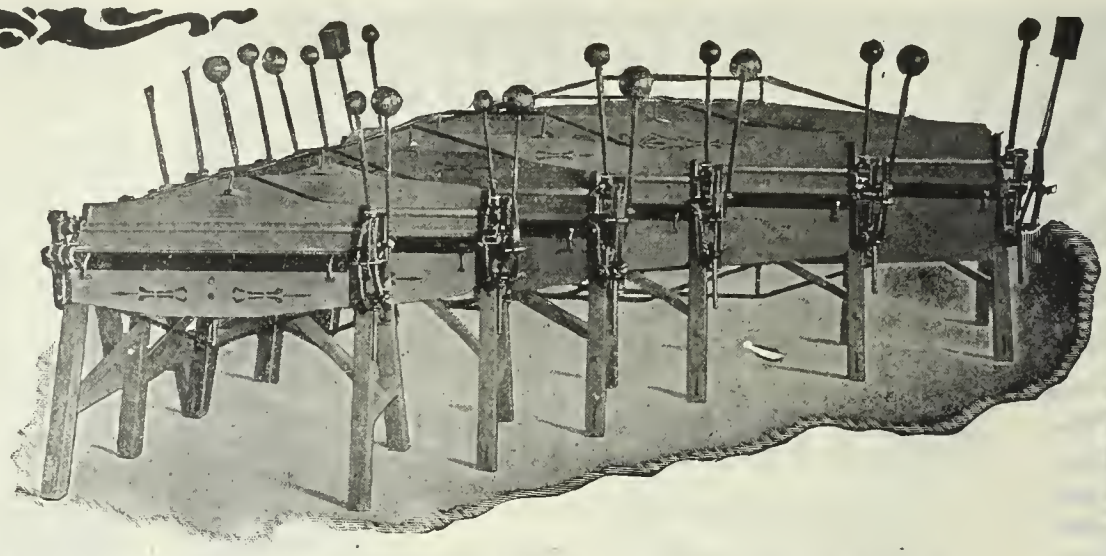

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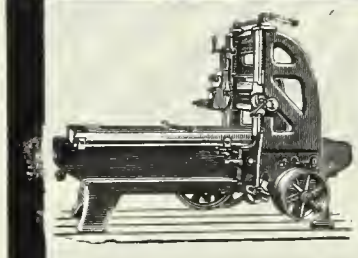

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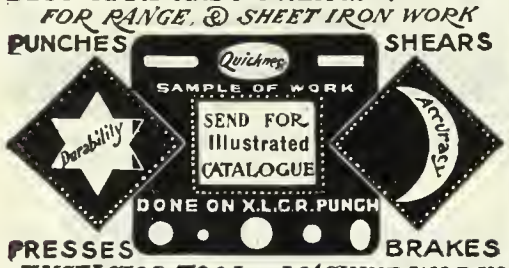

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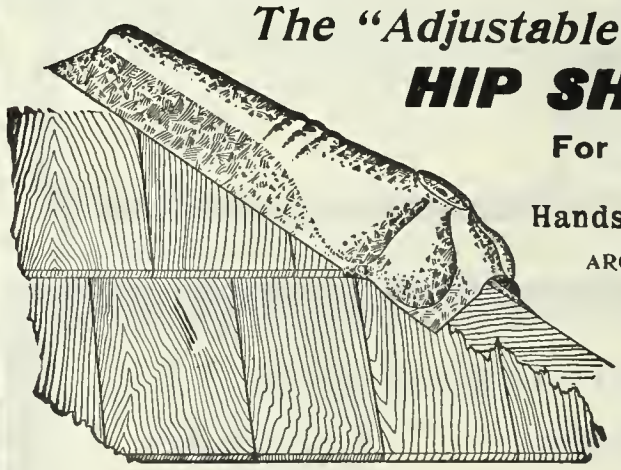

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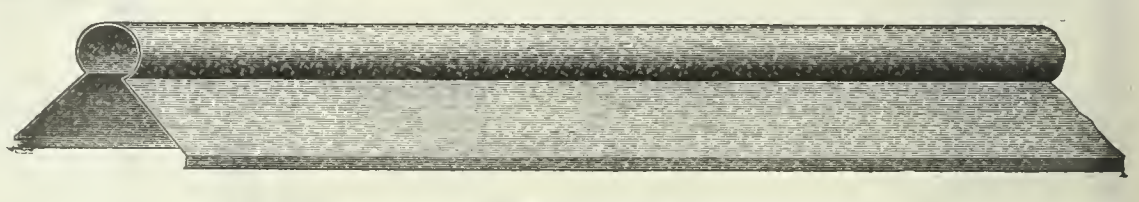

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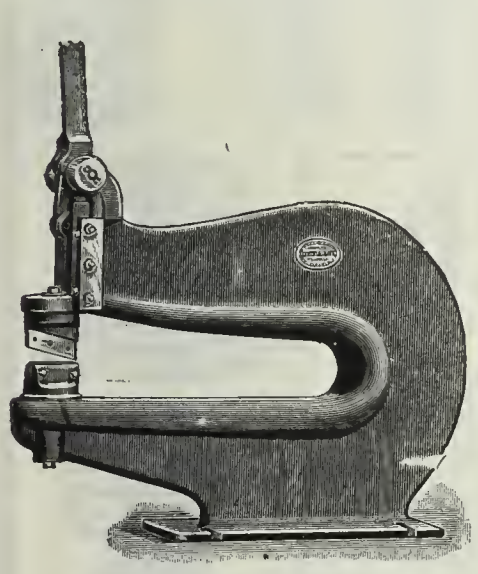
JAMES H. WATSON ESTATE, - - CRAWFORDSVILLE, IND.

Shears and Punches for Range Makers.



Drop Throat Shears.

On account of the deep throat these machines can be used for cutting and punching holes in large sheets. The knives *are arranged to swivel,* which permits of cutting from front to back, right to left, or at any desired angle, according to the nature of the work. The position of the knives can be changed quickly. The knives are 4 in. long, and each of them has two cutting edges, which can be used alternately.

For punching work, a die holder with die, punch and stripper takes the place of the knives.

Will cut iron up to 1/8 in. thick.

Will punch 1/4 inch hole in No. 14 iron.

MADE BY

Niagara Machine & Tool Works, Buffalo, N. Y.

THE PECK, STOW & WILCOX CO.,

New York,
—AND—
Cleveland, Ohio.

HARE'S FOUR LEAF CORNICE BRAKE.

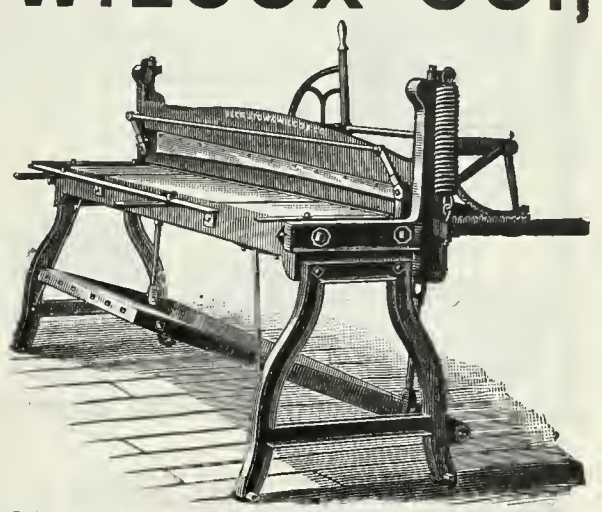
Hundreds sold and never a complaint. Works easily and rapidly. The universal verdict is, **IT IS THE BEST IN THE WORLD.**

96 inches long.

Tinsmiths' Tools of the Highest Grade.

Our *Improved Eureka Cornice Brake.* Will bend No. 20 iron.

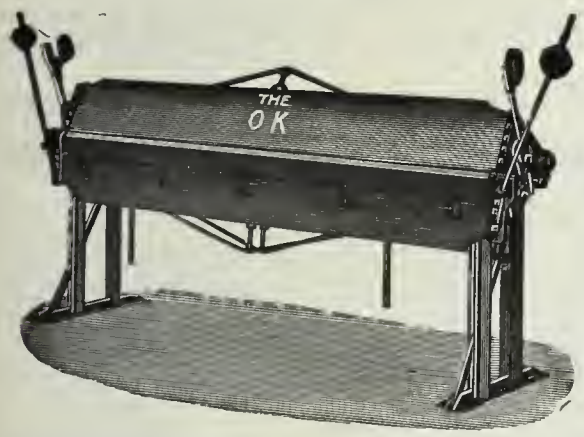
96 inches long.



CORNICE MAKERS' SQUARING SHEARS.

With Lever Arc, Automatic Gauge. Will cut No. 22 iron

97 inches long.



The O. K. Steel Brake.

PRICES FOR OUR REGULAR SIZES.

No.	Gauge it will Form Full Length.	Length on Forming Edge.	Price
1	16	12 ft. 1 in.	$300
2	16	10 ft. 1 in.	225
3	16	8 ft. 1 in.	150
4	22	8 ft. 1 in.	100
5	12	4 ft. 1/2 in.	75
6	16	4 ft. 1/2 in.	60
7	22	4 ft. 1/2 in.	50

Formers on cornice brakes included.

Discount and particulars on application.

Brakes for steel range work or other specialties to form up material from 10 gauge up

Dreis, Andrews & Krump,

Successors to O. K. MFG. CO.,

3039 & 3041 South Halsted Street, CHICAGO, ILL.

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445 North Darien St., Phila, Pa.,

TESTING MACHINES and *SOLE AGENTS* for HENNING TESTING APPARATUS.

PRESSES and SHEARS, CORNICE PRESSES, CURVED MOULDING MACHINES, etc.

SHOVEL MACHINERY

We build complete equipments and control the latest patented machines for this work.

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We make the very latest improved machinery for manufacturing cans and pieced tinware.

STEEL RANGE MACHINERY.

Recognized leaders for machinery and dies for oil and gas stoves, and gas and steel ranges.

For further particulars write.

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SELIG-SONNENTHAL & CO., Agts., London, England.

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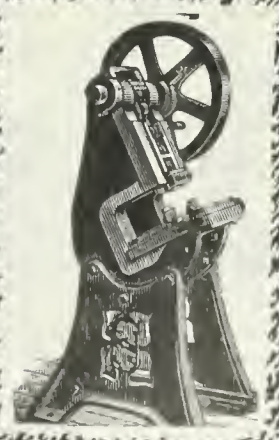
PRESSES. DIES.

Rolls Seamers. Sheet Metal Tools.



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TINNERS' TOOLS, MACHINES and SUPPLIES. Plumbers' Tools, Tinners' Hdwe., Soldering Flux, Salts, Coppers, Rosin, Roofing Cement, Rivets, Bolts, Screws, Slaters' Tools, Second-hand Machinery and SKYLIGHT GEARING.

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Designers and Builders of Presses, Dies, Shears, Slitters, Double Seamers, Crimpers, etc., etc., for working all kinds of Sheet Metals.

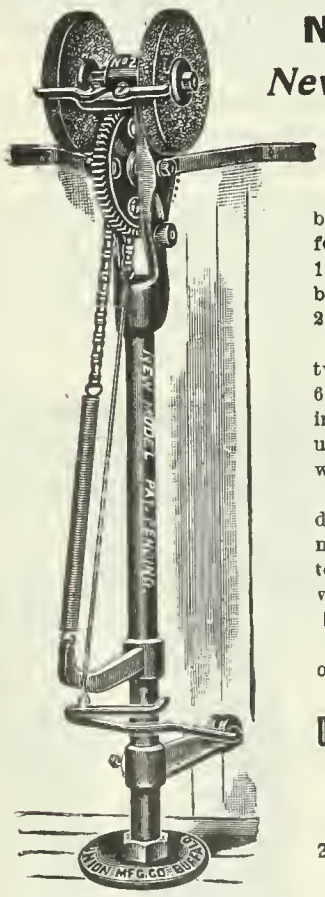
A few of the many articles for which we make the complete machinery for producing are shown in the accompanying cuts.

ALSO OWNERS OF **THE STILES & PARKER PRESS CO.**

UNION TOOL GRINDER NO. 2.

New Model.

(PAT. PEND. 1900)



This machine embodies all the good features of our No. 1. All gear driven, ball ratchet, speed 2 to 4 thousand.

Furnished with two emery wheels, 6 x ¾ steel shaft, 1 in. tubing for column. Shipping weight 35 lbs.

Plumbers, stove dealers and repair men will find this tool a very good investment.

PRICE $8.00, NET.

Ask your dealer or write direct.

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Manufacturers of all kinds of

METAL WORKERS' MACHINES.

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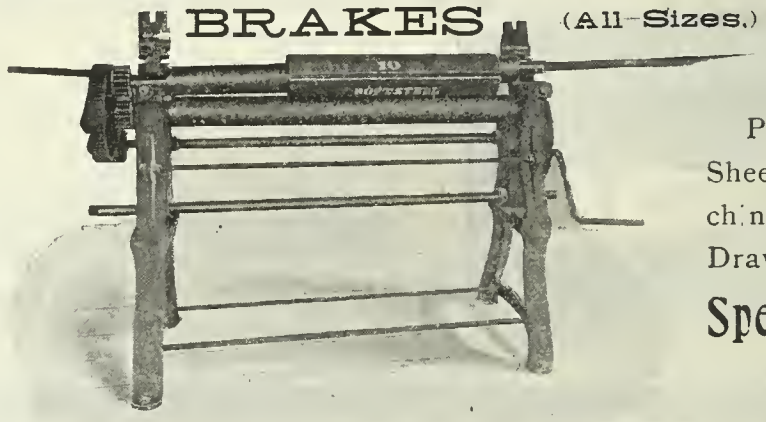

4 in. SLIP ROLL FORMER.

Heavy and Light Squaring Shears.

Punches, Presses, Sheet Steel Lath Machines, Drop Presses, Draw Benches, and

Special Machinery

of all descriptions.

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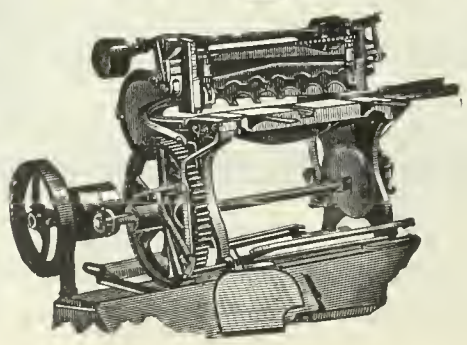
For Squaring, Trimming and Slitting No. 6 0⅜ Plates and lighter Gauges. Made in Lengths up to 11 ft.



The most practical and powerful shear on the market. Has all improvements. Write for circulars descriptive of this and 100 other sheet metal working tools.

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Agents: MERCHANT & CO., Philadelphia, Pa.

— NECESSARY TO HIM.—"What, with croup, measles and all that, children are a great care," remarked the family man, "but they're blessings."

"Indeed they are," cordially responded the stranger. "I don't know how we should get along without them."

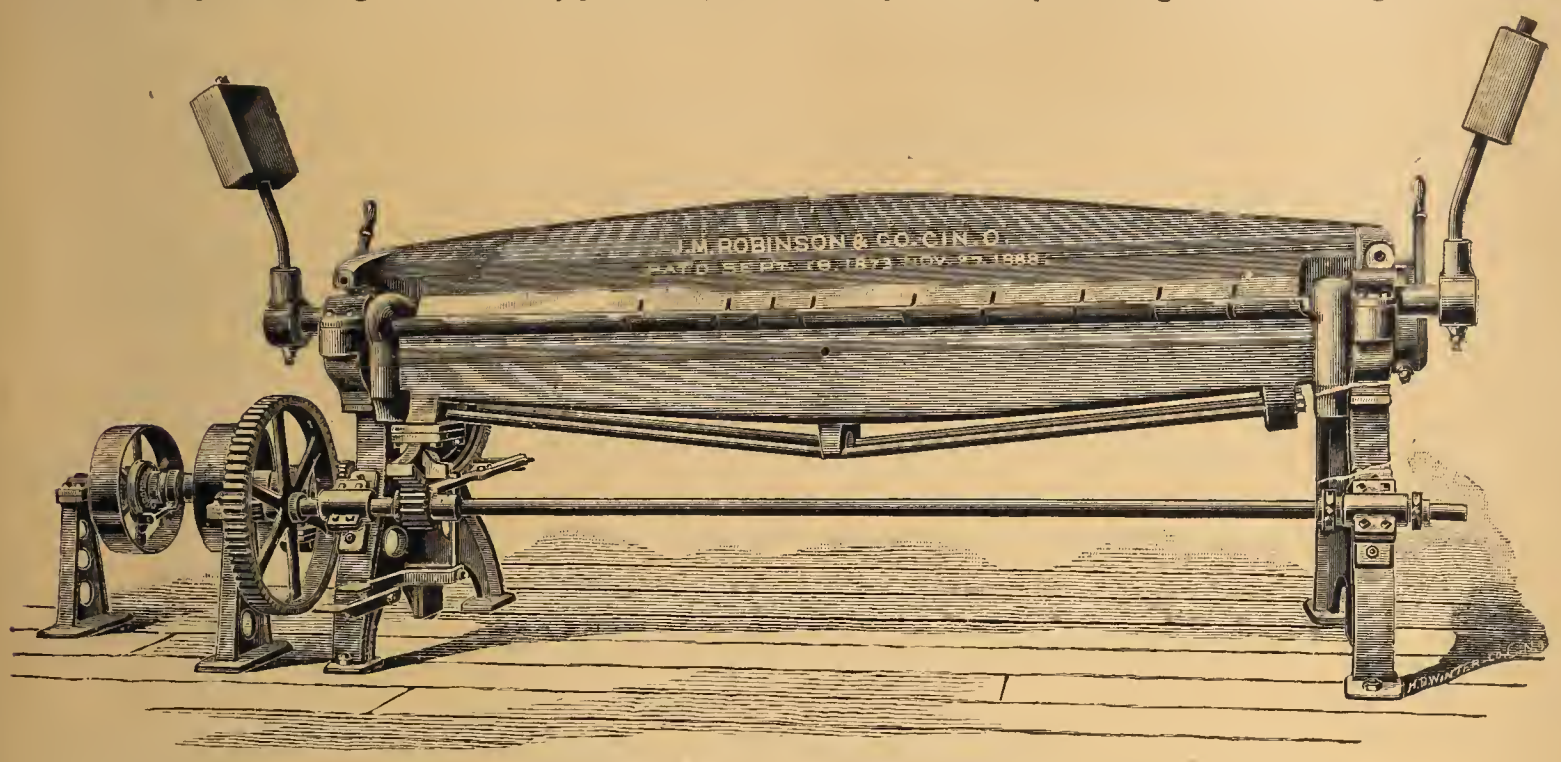
"Ah! You are a family man yourself?"

"No. A physician."—*Exchange.*

IMPROVED 8-FOOT GEARED POWER BRAKE.

Will Bend No. 14 Gauge Soft Sheet Steel, will Bend 10 Gauge Corners Rounding.

Power is communicated to the bending bar by means of our Patent Frictional Clutches through the medium of Spur Gearing, which is very powerful, and will stop at the required angle bend. Weight 6,000 lbs.



8-FOOT GEARED POWER BRAKE.

This same Brake is arranged for hand power when so desired. For No. 14 Gauge and Lighter.

WEIGHT, 5,500 LBS.

THE JAMES M. ROBINSON MFG. CO.,

325 to 331 West Second Street,
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KEENE FOOT POWER

CORNICE BRAKE.

Easiest to Operate, Strongest and Best.

SHEET METAL WORKING MACHINERY OF ALL KINDS.

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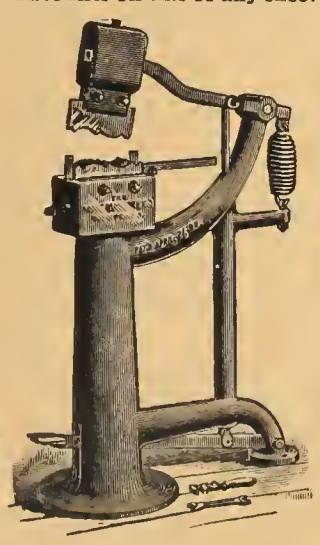
FOOT POWER

CURVE MOULDING HAMMER.

The cheapest, most convenient and best sheet metal moulding former ever offered. Produces a greater variety of work than any other. Quickly adjusted and easily operated. Write for prices and discounts on this or any sheet metal working tool you may desire. We will name you bottom prices.



IMPROVED

Patent Automatic Can Body Double Lock Seaming Machines.

COMBINATION

Presses and Dies, Sheet Metal Tools, &c.

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SEAMLESS BRASS AND COPPER TUBING.

All sizes from 1-8 in. to 9 in. diameter.

SHEET COPPER, COPPER BOLT, COPPER NAILS, TOBIN BRONZE SHEETS, CIRCLES, PLATES AND RODS.

We carry in stock a general line of Brass and Copper in Sheets, Rolls, Rods, Wire, Rivets, Nails, &c.

Our large and well-assorted stock (aggregating over 1,000,000 lbs.) enables us to fill orders promptly.

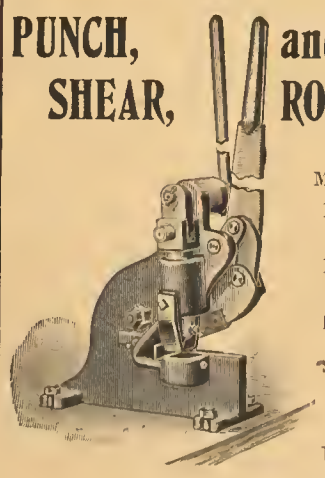
PUNCH, SHEAR, and... ROD CUTTER

COMBINED.

Made in 2 Sizes.

No. 1 Punches and Shears ¼ in. Flat, ¾ in. Rods
No. 2 Punches and Shears ½ in. Flat, ⅝ in. Rods.
Larger sizes made to order.

Send for Prices.



R. M. CLOUGH,

TOLLAND, - CONN.

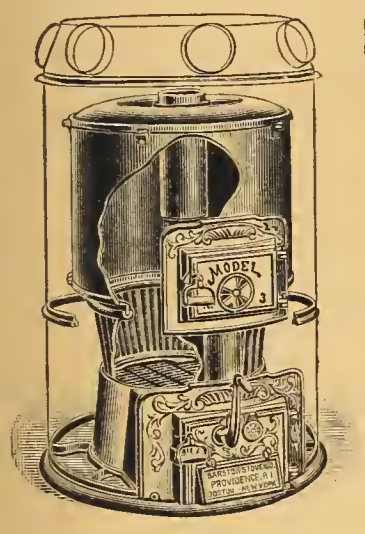
—Easy to See.—Brigham: "I saw you and your wife dining at the new restaurant last evening."

Burnham: "How did you know it was my wife?"

Brigham: "I heard you say: 'Guess we'd better have some roast beef.'"—*Boston Transcript.*

. . . THE . . .

MODEL FURNACE.



Its . . .

SIMPLICITY,

DURABILITY,

EFFECTIVENESS,

Are Leading Features.

The PRICE is also attractive.

SEND FOR CIRCULAR.

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Prompt Shipments Made of

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Terne Plates

BLACK AND GALVANIZED SHEET IRON.

N. & G. TAYLOR CO.,

Established 1810,

Manufacturers,

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FRINK'S WINDOW REFLECTOR

is the ideal and only perfect light for show windows. Being installed by leading stores all over the country. Circular and 200 references on request.

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Dunbar Foundry Pig Iron.
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American Sheet Iron Co.'s Sheet Iron.
American R. G., cleaned of uniform black color.
Dealers in all kinds of Iron and Steel Scrap.

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TINNERS' TOOLS and MACHINES.

TINNERS' SUPPLIES

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UTICA PIPE FOUNDRY CO.

"UTICA PIPE IS THE BEST." Cast Iron Soil Pipe. Cast Iron Water Pipe. Plumbers' Supplies and Lead Pipe.

CHARLES MILLAR & SON CO., Selling Agents, Utica, N. Y.

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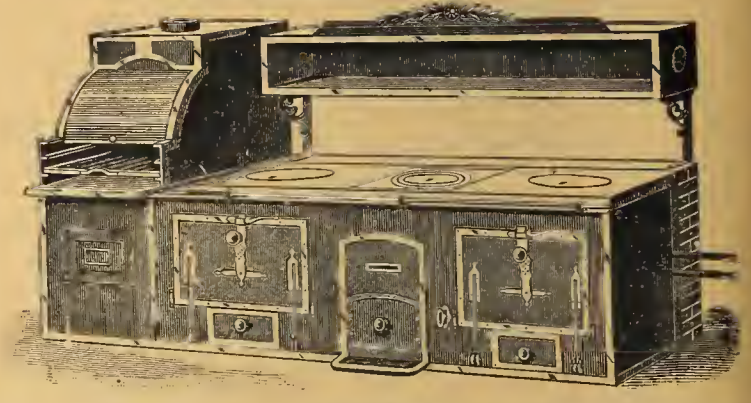

French Ranges, Broilers, Carving Tables
Stock Kettles, Tea and Coffee Sets,

And every requisite for the complete furnishing of any size Hotel or Restaurant Kitchen.

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SEND FOR OUR 120 PAGE CATALOGUE. BOSTON

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the man who stands right up in his boots and tells you that he don't claim to sell the lowest priced goods in town, and the next minute takes off his coat and proves to you that when quality and service are considered his goods are cheapest after all? Yes! **you admire him** and **you buy of him,** and a good many of those kind of men sell

GLENWOODS.

Write the Weir Stove Co., Taunton, Mass.

SOLDER

Our Various Brands:

ADMIRAL, FORT PITT, FREEHOLD,

Are made from strictly New Metals and the Proportions Guaranteed.

McCLURE & CO.

Manufacturers of Tin Plate,

PITTSBURGH, PA. 211, 213 and 215 Second Ave.

PHILADELPHIA, PA. 115 North 7th Street.

Index to Reading Matter, Page 60. Index to Advertisements, Pages 62-64

The Metal Worker

A WEEKLY JOURNAL OF THE ROOFING, CORNICE, STOVE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

VOL. LVI. NUMBER 9. NEW YORK AND CHICAGO, AUGUST 31, 1901. ONE DOLLAR A YEAR. SINGLE COPIES 5 CENTS.

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Albany, N. Y.
Fire Brick Stove Linings
HIGH GRADE. LOW PRICE.
Also **Plastic Iron Stone Stove Lining**
In Bags or Barrels. Send for Prices.

The Gorton Side Feed Boilers
FOR STEAM AND HOT WATER HEATING.
INVESTIGATE FOR YOURSELF.
Send for Catalogue and Prices.
CORTON & LIDGERWOOD CO.,
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77 Oliver St., BOSTON. Prudential Bldg., ATLANTA, GA.

STOVE LININGS
McLEOD & HENRY CO.,
TROY, N. Y.

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The Paragon Furnace has six special points of superiority over other hot air furnaces and we think them of sufficient importance to discuss one point a week in this space. Enough for this week to name the six points:

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Apollo galvanized
on is better than you
uspect, unless you have
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nows, but the workman,
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erial.

American Sheet Steel Company
Battery Park Building
New York

THE fall months are at hand. You must increase your trade over last season.
P. P. STEWART STOVES WILL HELP YOU TO DO IT....
Write for prices on the style in which you are most interested.
FULLER & WARREN CO., Troy, N. Y.

FOLLANSBEE BROTHERS CO.,
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Galvanized and Black Sheets.

Roofing Tin Plates: the best imported, Follansbee Bros. Co.'s Pure Iron Old Style; the best American, Scott's Extra Coated.

THE DIGHTON FURNACE Page 21.

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GLOBE and ANGLE VALVES, IRON and BRASS.
All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.
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RELIEF and ELEVATOR VALVES, STEAM TRAPS, STEAM AND WATER REDUCING VALVES, TANK TEMPERATURE REGULATORS and A No. 1 DAMPER REGULATORS
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Jenkins Bros.' Valves
are manufactured of the best steam metal, and are fully guaranteed. Why experiment with cheap valves? If you want the *BEST* ask your dealer for valves manufactured by Jenkins Brothers. Remember all genuine are stamped with Trade Mark like cut.
JENKINS BROTHERS, New York, Philadelphia, Chicago, Boston.

READ OUR "AD"
Page 19.
MAGEE FURNACE CO.,
Boston.

ROUND OAK
STANDARD OF AMERICA

CVRTIS GANDY DEL CHICAGO 1901

We do not run down other people's furnaces

under any circumstances. We say there are cheap furnaces just as we say there are cheap stoves. We also say that it is poor policy for any dealer to handle a cheap furnace and we are prepared to prove it.

Estate of
P. D. Beckwith, Dowagiac, Mich.

MAKERS OF GOOD GOODS ONLY.

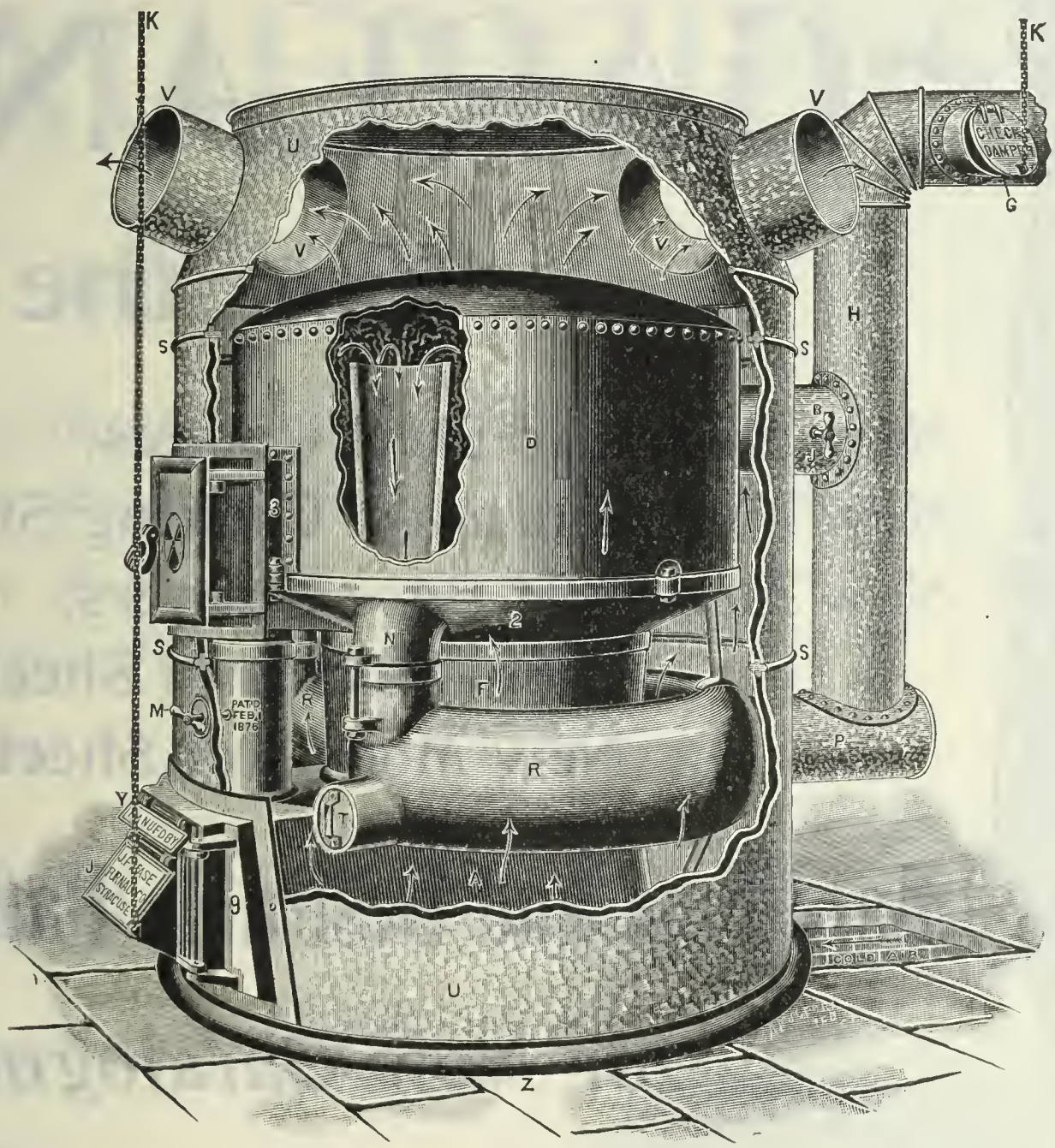
35

Like a house builded upon the sand, so is a trade founded upon the sale of "Paste-Board" Heaters

The dealer who sells "Economy" Furnaces builds upon the rock.

The PEASE-ECONOMY
WARM AIR FURNACE

Has proven the corner-stone of more than one steady, lucrative business.



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This is a Heavy, Durable Heater of the Highest Efficency, but of Moderate Price. : : : : : :

International Heater Co.,

UTICA, N. Y.

BOSTON, NEW YORK, CHICAGO, DENVER.

Largest Makers of Heaters in the World.

Nothing too

"GARLAND

For the Se

New Models of Steel Ranges.
New Models of Steel Cooking Stoves.
New Models of Base Burners.
New Models of Sheet Iron
New Models of Sheet Iron

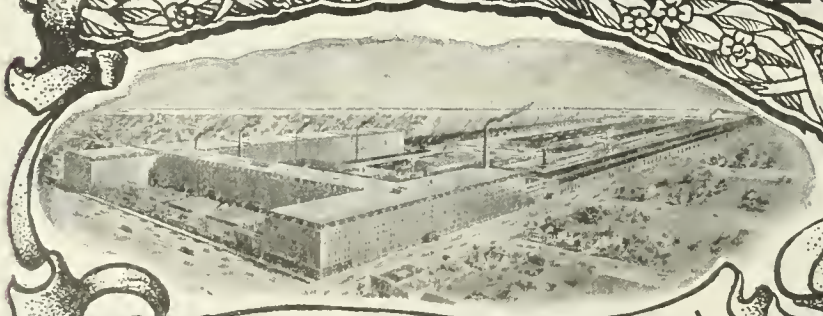
More New and Desirable Patterns

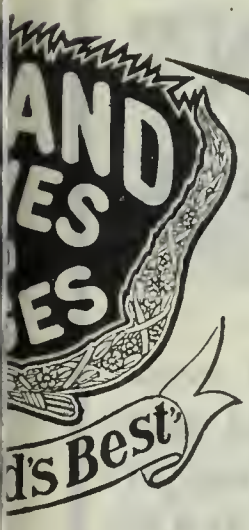
Our New Catalogue is

The Michigan

Largest makers of Sto

DETROIT. C





First Prize Paris, 1900.

Good for

AGENCIES

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New Models of Cast Ranges.
New Models of Cast Cooking Stoves.
New Models of Oak Stoves.
eaters for Coal (Hot Blasts).
aters for Wood (Air Tights).

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urs for the asking.

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nd Ranges in the World.

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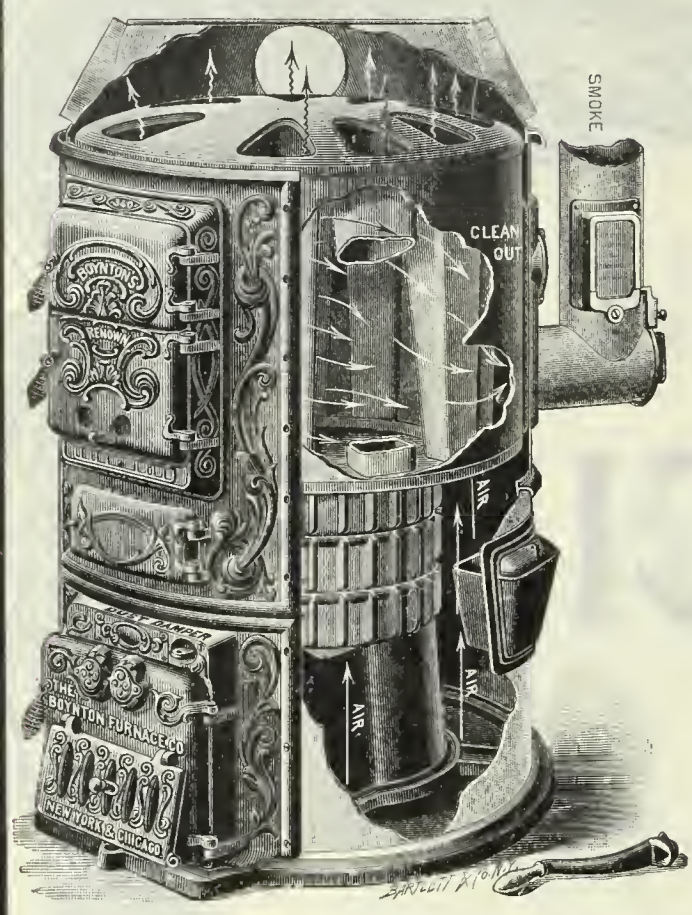
WESTERN HEADQUARTERS. CHICAGO.

BOYNTON'S "RENOWN"

PORTABLE FURNACE



A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

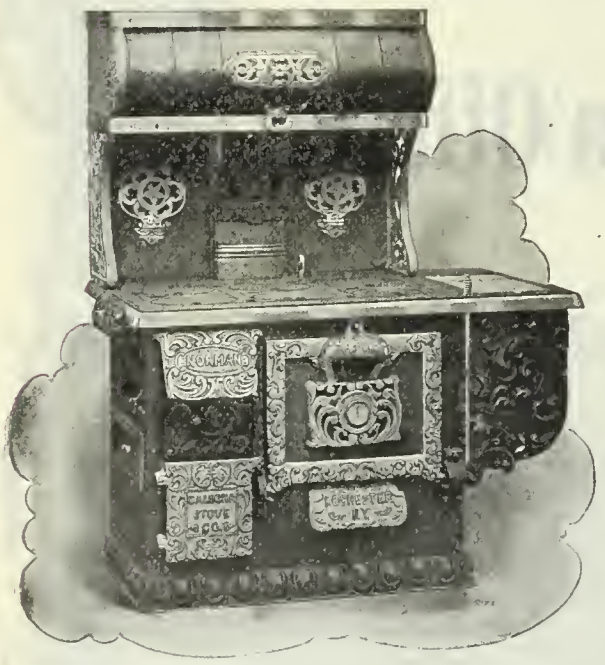
Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**

NEW YORK, CHICAGO.

"Norman" Steel Range.

BUILT LIKE A WATCH.



ATTRACTIVE.

ECONOMICAL.

DURABLE.

In the "NORMAN" Range are embodied up-to-date features that sell stoves.

The Fire Box is Oval in Shape and of Goodly Dimensions.

Either Duplex or Dockash Grates can be used. Grates removable through end door without removing any fire box linings.

Send for Illustrated Catalogue descriptive of our full line of Steel and Cast Ranges and Heaters.

GALUSHA STOVE CO., Makers, - ROCHESTER, N. Y.

QUICK MEAL

ENAMELED STEEL RANGE.

Is the Range that will make a reputation for the dealer.

Is a Range that Speaks for itself and that will give a dealer the name of handling First-Class Goods.

Is the Range that will Command the Respect of all his Customers and make them talk of its Good Qualities.

"Quick Meal" Enameled Steel Ranges have their own Individual Features and the dealer has no trouble in showing WHY it is the Best and WHY it has become so Popular.

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The Portsmouth Stove & Range Co., Portsmouth, O.

MORLEY BROS., Saginaw, Michigan, Agents for Northwest.

THE BUSIEST MAKERS OF STOVES & RANGES IN THE WORLD

We Make

THE LARGEST LINE OF THE BEST, SMOOTHEST, HEAVIEST AND MOST RELIABLE

CANNON STOVES

ON THE MARKET. SUITABLE FOR OFFICES, SCHOOLHOUSES, STORES, CHURCHES AND RAILROAD SHOPS.

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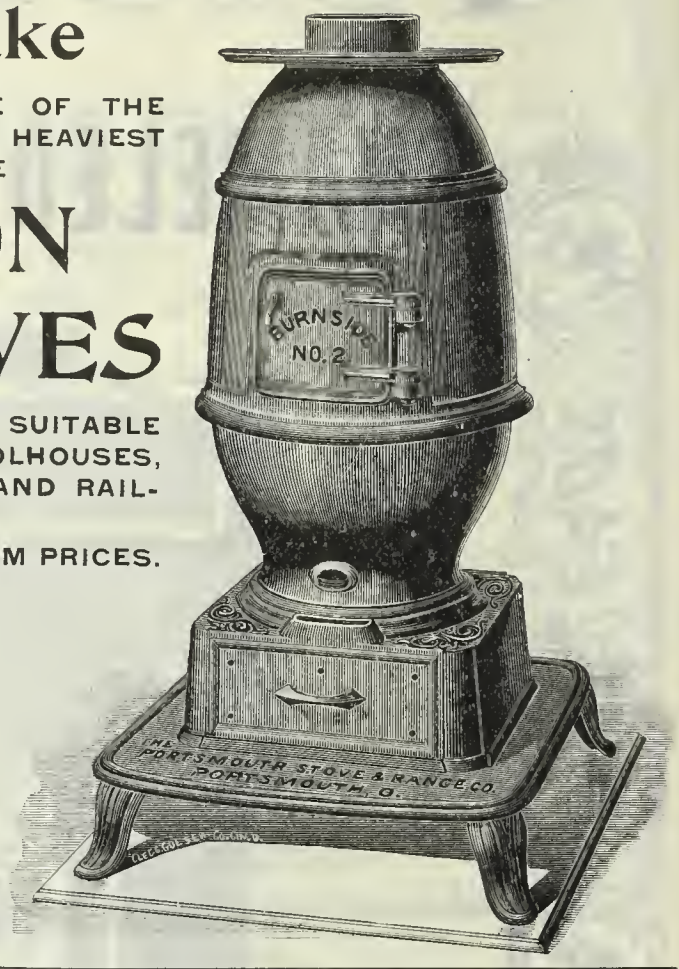

BRIGHTON AIR-TIGHT HOT BLAST.

Patent Applied for.

SOMETHING NEW!

THIS is not an every day "Air Tight Stove" that almost every stove foundry makes. While the general construction is the same, the principle is different.

This stove is furnished with a blow pipe fastened to inside of feed door and extends inside to the center of fire pot and is controlled by a screw register on outside of feed door.

DIRECTIONS FOR USING:

Close up all openings below feed door and regulate your fire entirely by screw register in the feed door.

By following these instructions you will produce more heat with this stove and consume less fuel than with any other stove made.

WRITE FOR PRICES AND SECURE THE AGENCY FOR THE BEST LINE ON EARTH.

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Manufacturers of

Steel Ranges, Cast Ranges, Oak Stoves, Etc.

CRAWFORD OAK.

We have steel enough to supply a few new Oak customers if they decide early.

We have not advanced Oak prices. We will try to suit you with both price and quality.

Walker & Pratt Mfg. Co.,

Finest Stove Foundry in the World.

31-35 Union Street, Boston, Mass.

For Beauty, Simplicity, Convenience and Heating Power,

The Improved....

"NEW PROCESS"

AND

"IMPROVED" Standard OIL HEATERS

Excel all others.

You must order early if you expect to get heaters this year. Our jobbers have them.

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THE ETNA FURNACE

Is a furnace worth talking about and selling.

It is the result of twenty years' experience in hot air practice, and knowing the wants and the requirements necessary to produce successful, satisfying results we made the Etna accordingly.

The Etna contains many strong, practical features not found in the majority of others. We feel satisfied they will meet the approval of every dealer who has been up against the heating problem and encountered its difficulties. We have smoothed out some of the rough places.

READ THE CATALOGUE. SENT FOR THE ASKING.

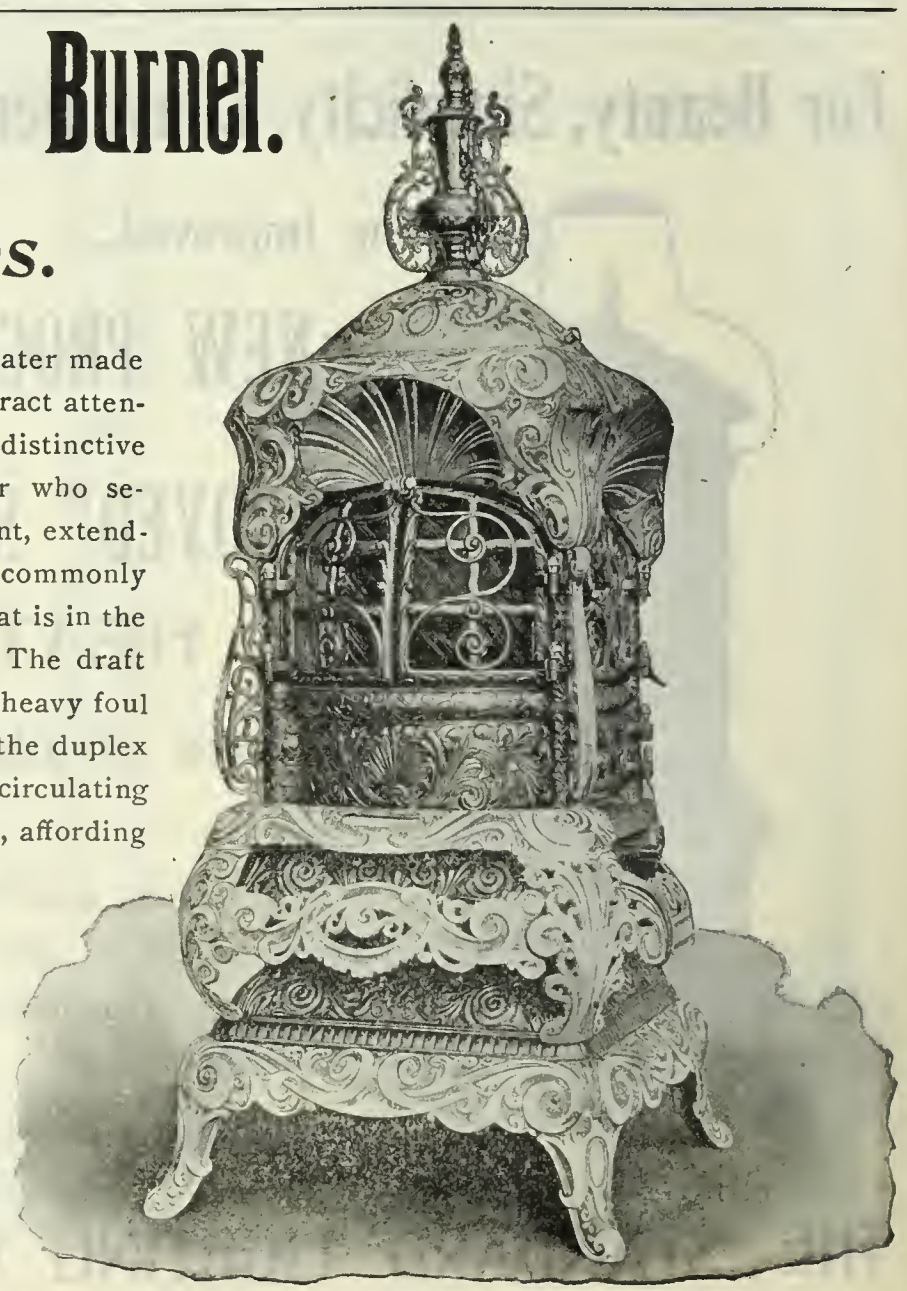
Pittsburgh Stove & Range Company

PITTSBURGH, U. S. A.

The Monitor Base Burner.

High Art Series.

It is without doubt the most powerful heater made and its rich and graceful appearance will attract attention at once. The novel construction and distinctive features offer every advantage to the dealer who secures the agency. The diving flue is in front, extending entire width of stove, being what is commonly known as a sheet flue, thus the greatest heat is in the front of the stove where it is most needed. The draft is taken in through the bottom, carrying the heavy foul air which settles near the floor. Grate is of the duplex pattern with outer shaking ring. Two large circulating flues are fitted in rear corners of the stove, affording ample circulation for heating evenly the largest room. Send for new Catalog and secure the agency without delay.



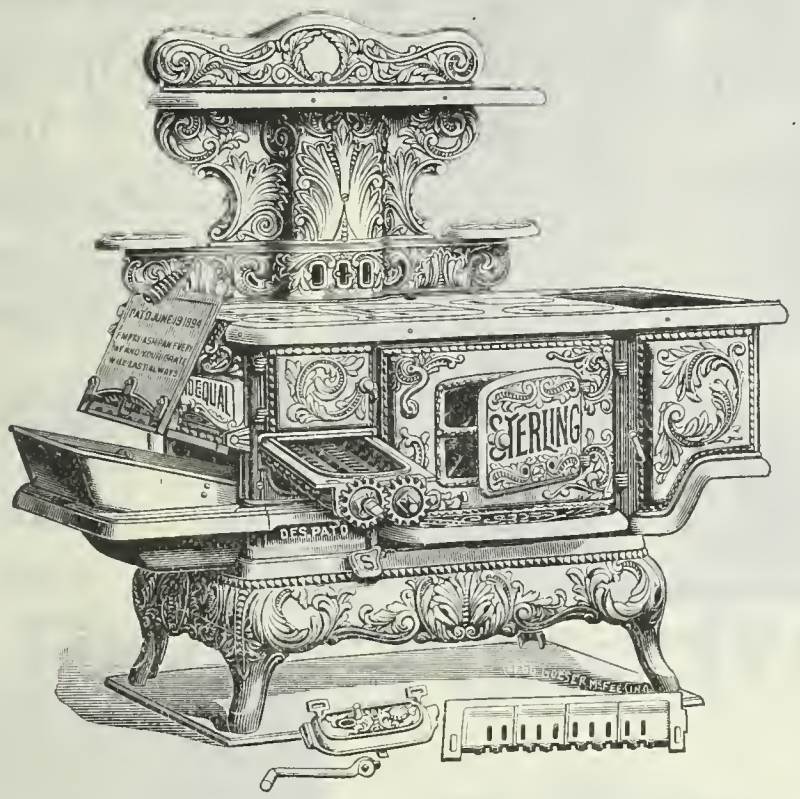
The Wm. Resor & Co.,

CINCINNATI, U. S. A.

OUR CATALOGUE

IS NOW READY.

WRITE AT ONCE FOR TERMS AND DISCOUNTS and secure the agency for your town before your competitor gets ahead of you.



A STERLING

Range or Stove

"Has No Equal."

SILL STOVE WORKS, MAKERS,

MAIN OFFICE AND FOUNDRIES:

ROCHESTER, N. Y.

BOSTON,
44 Hanover Street.

CHICAGO,
237 E. 26th Street.

FROM THE RED CROSS LINE OF

ORNAMENTED CAST FRONT. TRIANGULAR GRATE.

THE NEW

"Ajax" Furnace.

THE MOST FURNACE FOR THE LEAST MONEY IN THE MARKET.

With Steel or All Cast Iron Radiator.

Furnished, when ordered, with

DOWN DRAFT

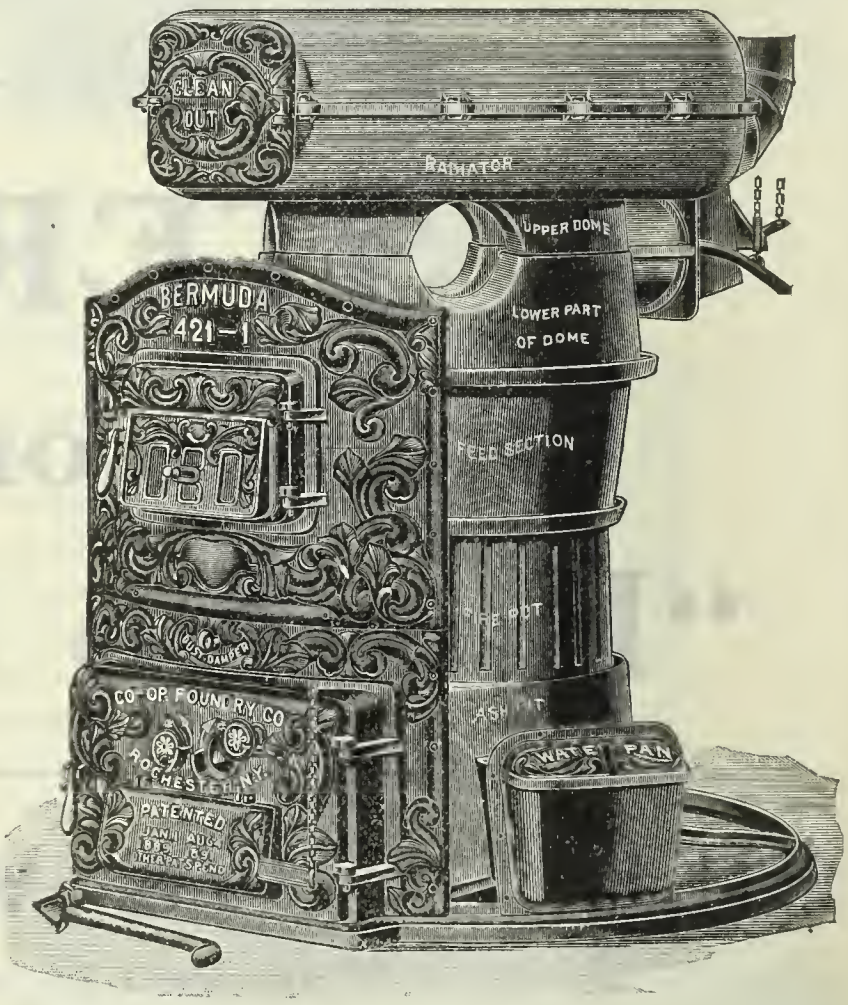
HOT BLAST GAS AND SMOKE CONSUMER.

Also, when ordered, we supply the popular

TWO BAR ECLIPSE REGULATOR.

Send for descriptive Catalogue.

The Bermuda



Greatest of Hot Air Furnaces.

The Embodiment of Simplicity, Efficiency and Economy.

HIGHLY ORNAMENTED CAST FRONT.

DOUBLE RADIATORS.

TRIANGULAR GRATE.

Manufactured by.... **CO-OPERATIVE**

Western Agency, J. P. LINDI

TOVES, RANGES AND FURNACES.

Red Cross Pilot Range

Brand New.

FOUR HOLES.

For Hard or Soft Coal or Wood.

Duplex or Dock Ash Grate.

The Cheapest Yet.

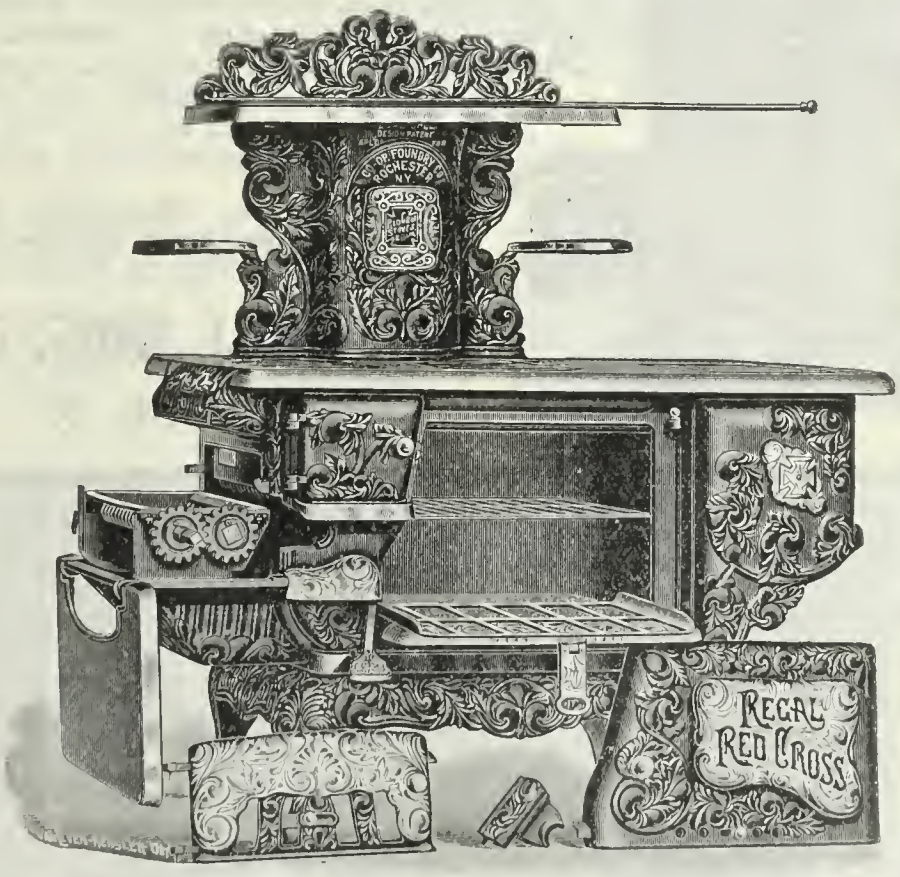
Regal Red Cross Range

The Handsomest in the Trade.

FOUR HOLES.

For Hard or Soft Coal or Wood.

Duplex or Dock Ash Grate.



TOUNDRY CO., Rochester, N. Y.

NN & SONS, Milwaukee, Wis.

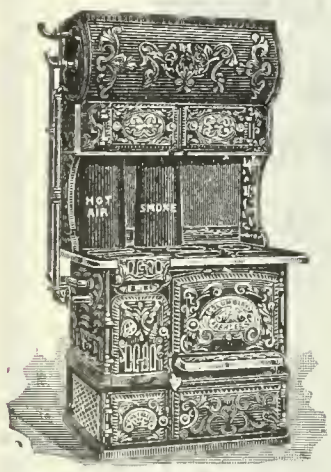
CATALOGUES SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

DEALERS, BUILDERS AND OWNERS



COLUMBIAN LINES.

Should secure our Line of Goods. They will then have the Best on the Market.

The Columbian Banner, Comet, Prince and Climax Furnaces, and the Columbian Peerless, Victor, Newport, Star and Triumph Ranges are all substantial, efficient and economical.

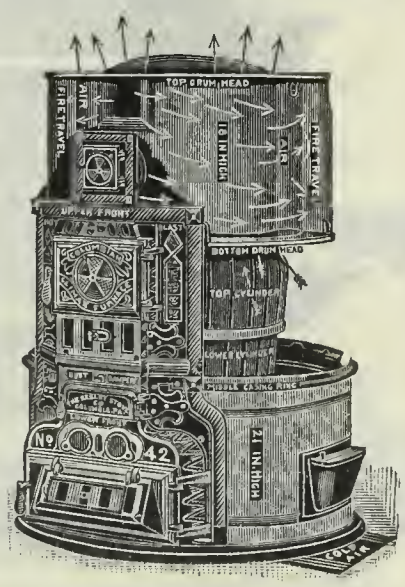
ALL KINDS OF WOOD AND COAL

Airtights, Base Burners, Globe and Cylinder Stoves, Gasolene and Oil Stoves.

Write us for full information and catalogues.

THE KEELEY STOVE CO.,

COLUMBIA, PA.



COLUMBIAN LINES.

Chicago Branch: JACOB RETTERER, 167 and 169 Lake St., Chicago, Ill.

DON'T

handicap yourself in the stern competitive struggle after business by handling an inferior range or furnace. You can't afford to pursue such a course or you will find yourself in the rear division of the procession. The way to get to the front in the furnace and range trade in your town is to handle recognized leaders like **SCHILL** **FURNACES** and **RANGES.** The company making these ranges has a larger capitalization and greater facilities than ever before, and these goods are to be even more widely known in the future than they have been in the past.

Write us for catalogue and discounts.

THE SCHILL BROS. CO.,

CRESTLINE, O.

JEWEL STOVES AND RANGES..

JEWEL STOVES AND RANGES
DETROIT STOVE WORKS
LARGEST STOVE PLANT IN THE WORLD

A Complete, Well Advertised Line; Low Prices and Good Workmanship.

Please Write for Catalogue.

DETROIT STOVE WORKS.

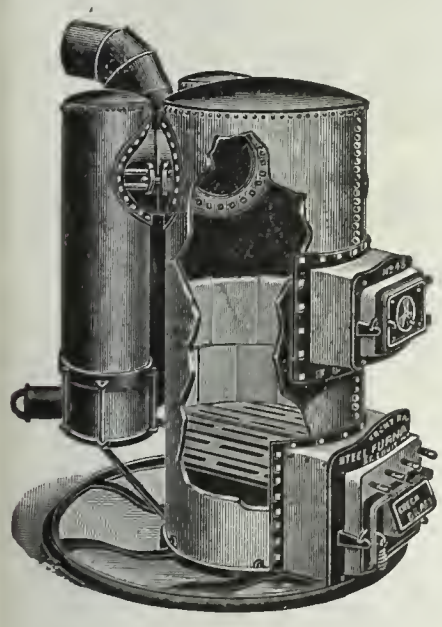
Detroit - Chicago.

AIR TIGHT HEATERS.

Our line in these comprises everything from the cheapest to the very finest finish possible to produce. Our manufacturing facilities and daily output justify us naming prices below any possible competition. This fact has enabled us to establish Wholesale Agencies in nearly every large city in the United States and makes it possible for us to supply the Dealer "Near His Door," saving time and freight. We also manufacture **Steel Ranges, Steel Cooks, Cast Ranges and Cooks, Hot Blast Coal Heaters, Oaks, Laundry Stoves, Radiators, etc.**, all up-to-date goods.

Write us for particulars and we will put you in the way of making some money.

EXCELSIOR STOVE & MFG. CO., - Quincy, Ills.



Front Rank Hot Air Furnaces

are built on vertical lines; air comes in direct contact with entire heating surface.

The Front Rank Fire Chamber is one solid sheet of closely riveted steel; being lined above the fire lines with genuine fire clay tiling it is the most durable made.

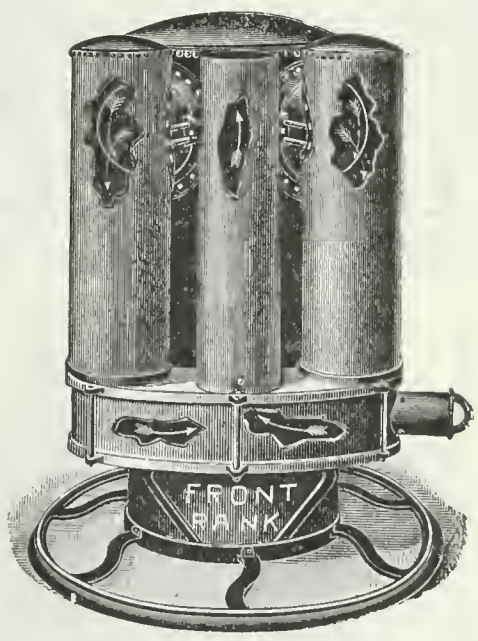
The radiators are very large and have an unusual area of heating surface in comparison with the size of fire pot.

These furnaces burn hard or soft coal or coke. We also make wood burning furnaces.

Send for our catalogue, it will give you a better idea of what we make.

FRONT RANK STEEL FURNACE CO.,

2301 to 2309 Lucas Ave., St. Louis, Mo.



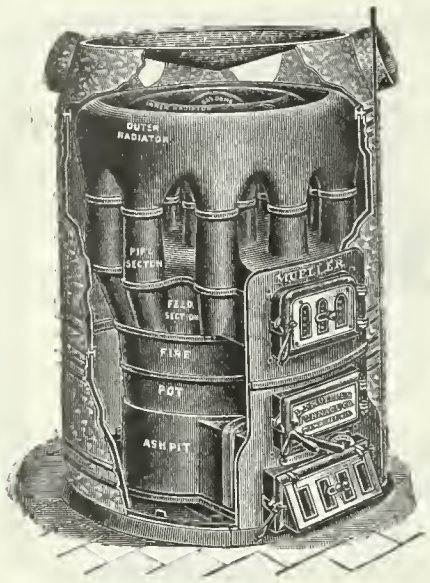
Gurney

HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES *and* STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

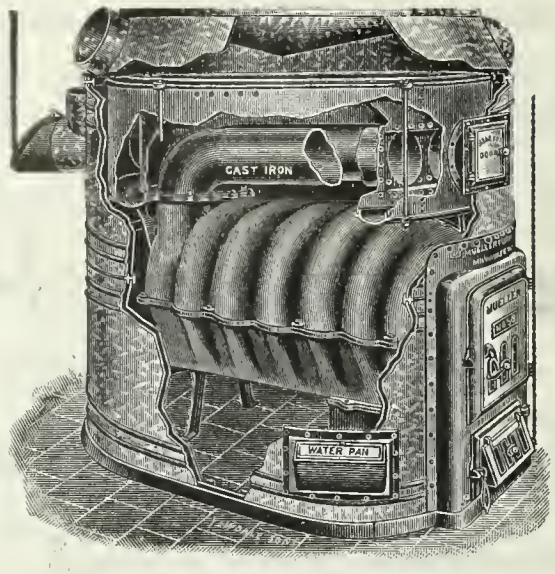
GURNEY AND COMPANY

WASHINGTON, HANOVER AND ELM STREETS

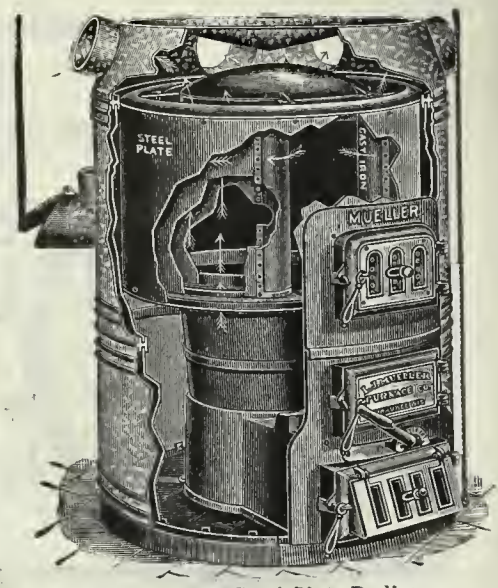
BOSTON, - MASSACHUSETTS



All Cast Iron Double Radiator.
For Hard or Soft Coal.



For 4 Foot Wood.

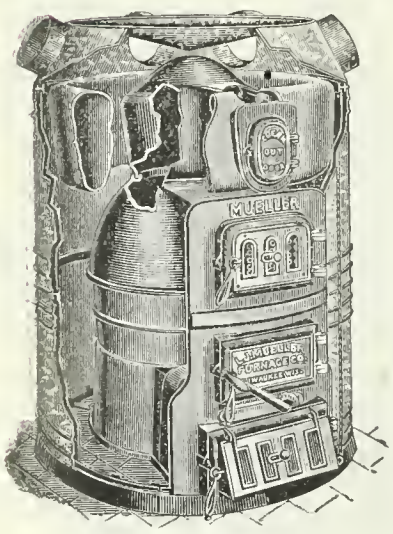


Return Flue Steel Plate Radiator.
For Hard Coal.

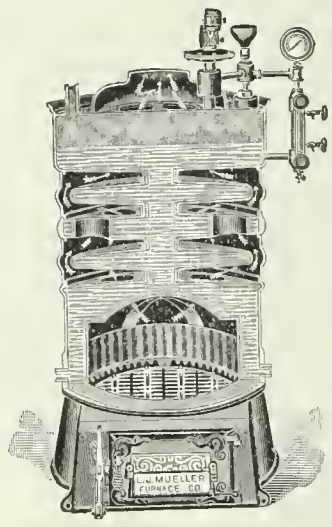
MUELLER

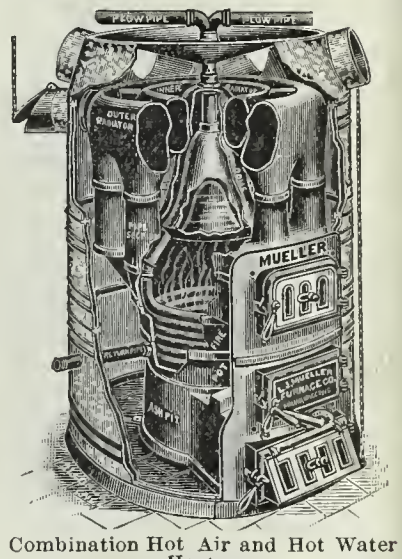
FURNACES

BOILERS



Return Flue Radiator.
All Cast.





Combination Hot Air and Hot Water Heater.

We have been making and selling furnaces for 44 years, during which period our policy has been to offer the trade only the best. To-day we make one of the largest and most popular lines of heaters in the market. If interested write for our 1901 catalogue.

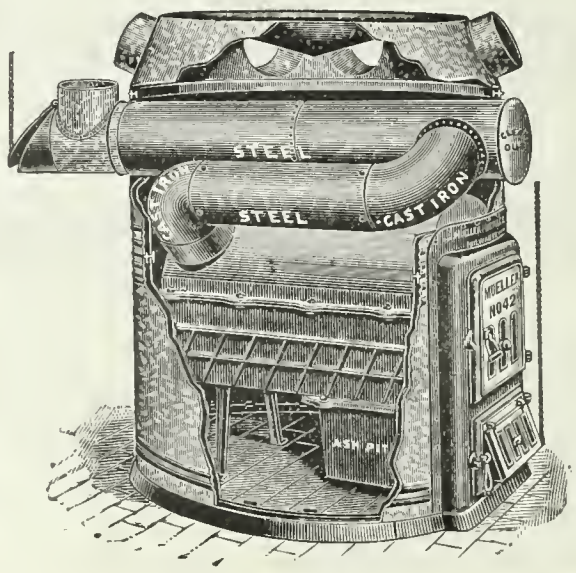
We believe it to your advantage to handle a line that is established and known to be right, rather than experiment with some new novelty.

EVERYTHING IN THE HEATING LINE.

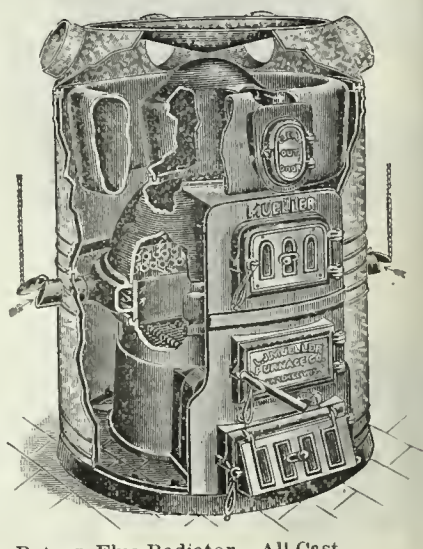
L. J. MUELLER FURNACE CO.,

190 Reed Street, MILWAUKEE, WIS.

Return Flue Steel Plate Radiator.
For Wood or Coal.



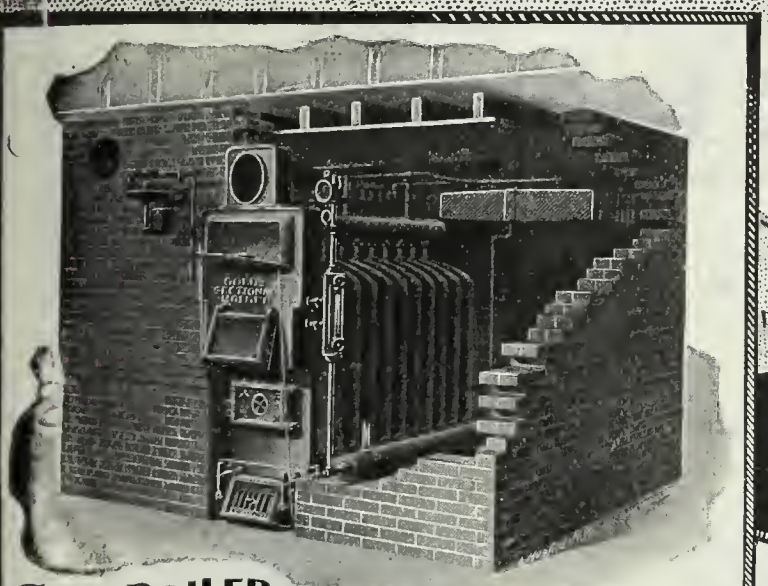
For 3 and 4 Foot Wood.



Return Flue Radiator. All Cast
With Air Blast Attachment.

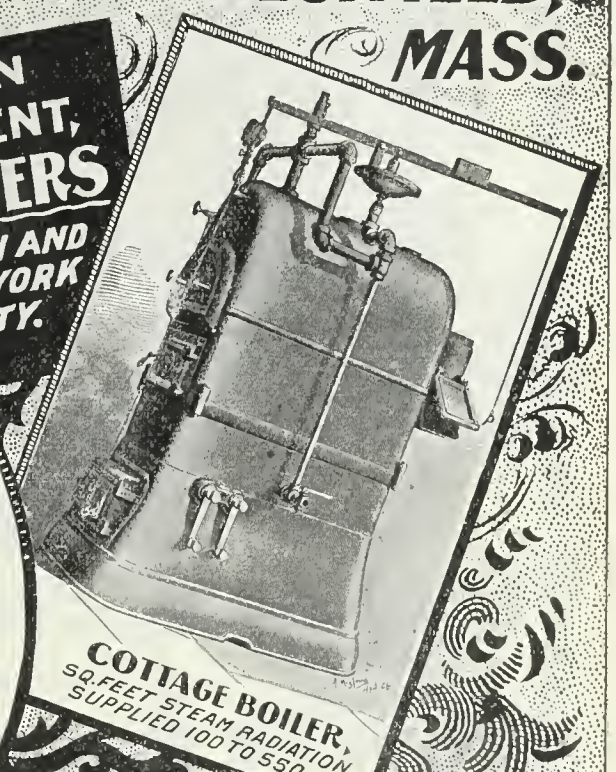
THE H.B. SMITH CO.

WESTFIELD, MASS.



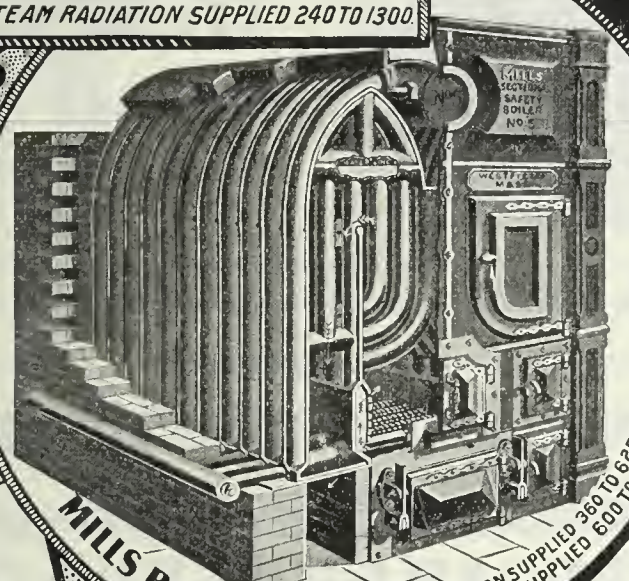
GOLD BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

EUROPEAN AGENT,
AUG. EGGERS
BREMEN AND NEW YORK CITY.

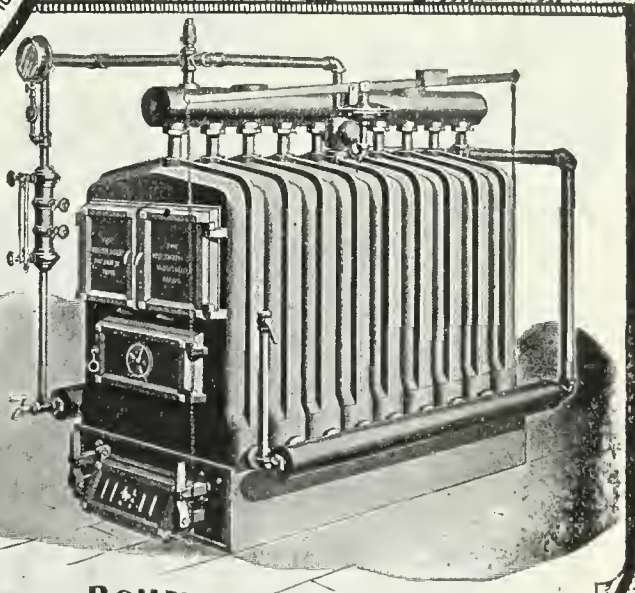


COTTAGE BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 100 TO 550.

PACIFIC COAST AGENTS,
DUGAN BRO'S.
SAN FRANCISCO CAL.

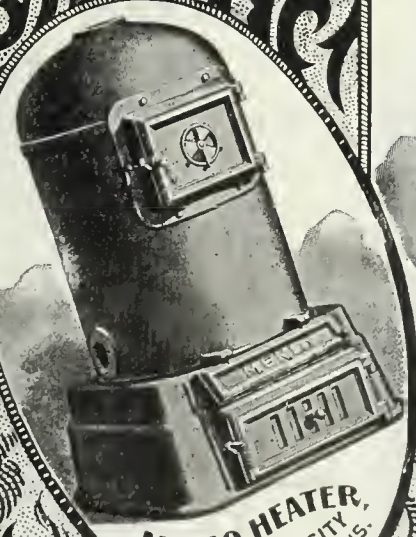


MILLS BOILER, SQ. FEET STEAM RADIATION SUPPLIED 360 TO 6250.
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.

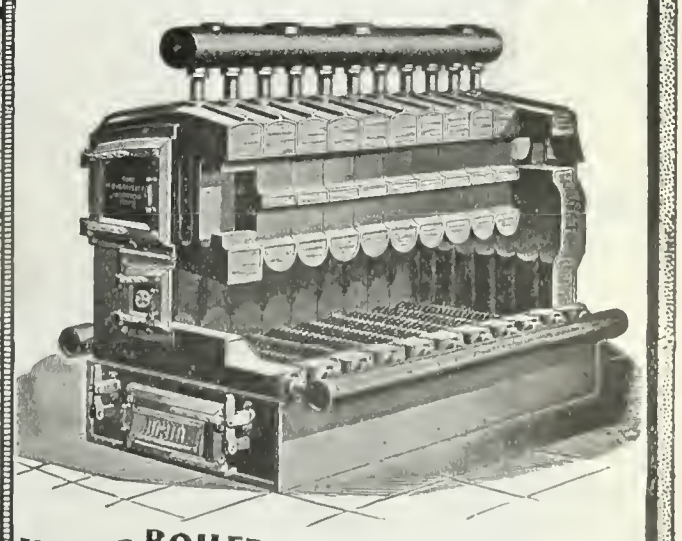
COTTAGE BOILER,
SQ. FEET WATER RADIATION SUPPLIED 150 TO 1000.



MENLO HEATER,
TANK CAPACITY
100 TO 180 GALLONS.

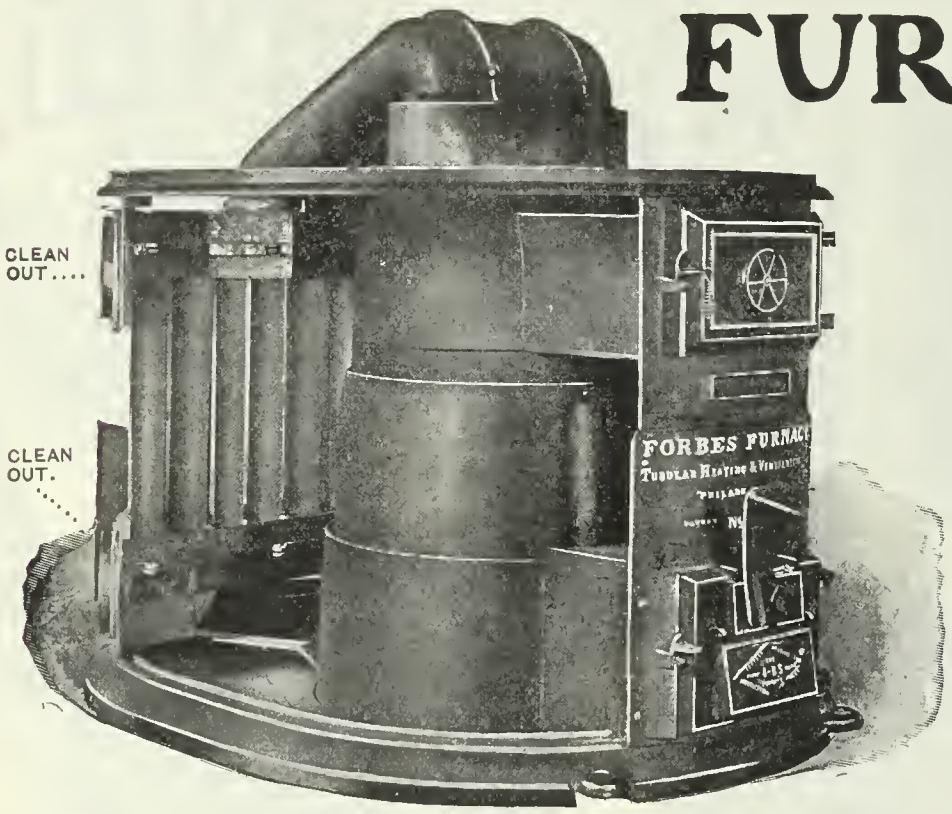
Western Agents
WESTERN BRASS M'F'G CO.
ST. LOUIS, MO.

SALESROOMS:
133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.



MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.

FORBES (IMPROVED) WARM AIR FURNACE.



ONLY 4 FEET 3 INCHES HIGH.

Compact and Simple Construction.

Aluminum Tubes

IN RADIATOR
ARE RUST PROOF.

Triplex Grate.

PERFECT SHAKING. PERFECT DUMPING.

Each Bar can be separately replaced.

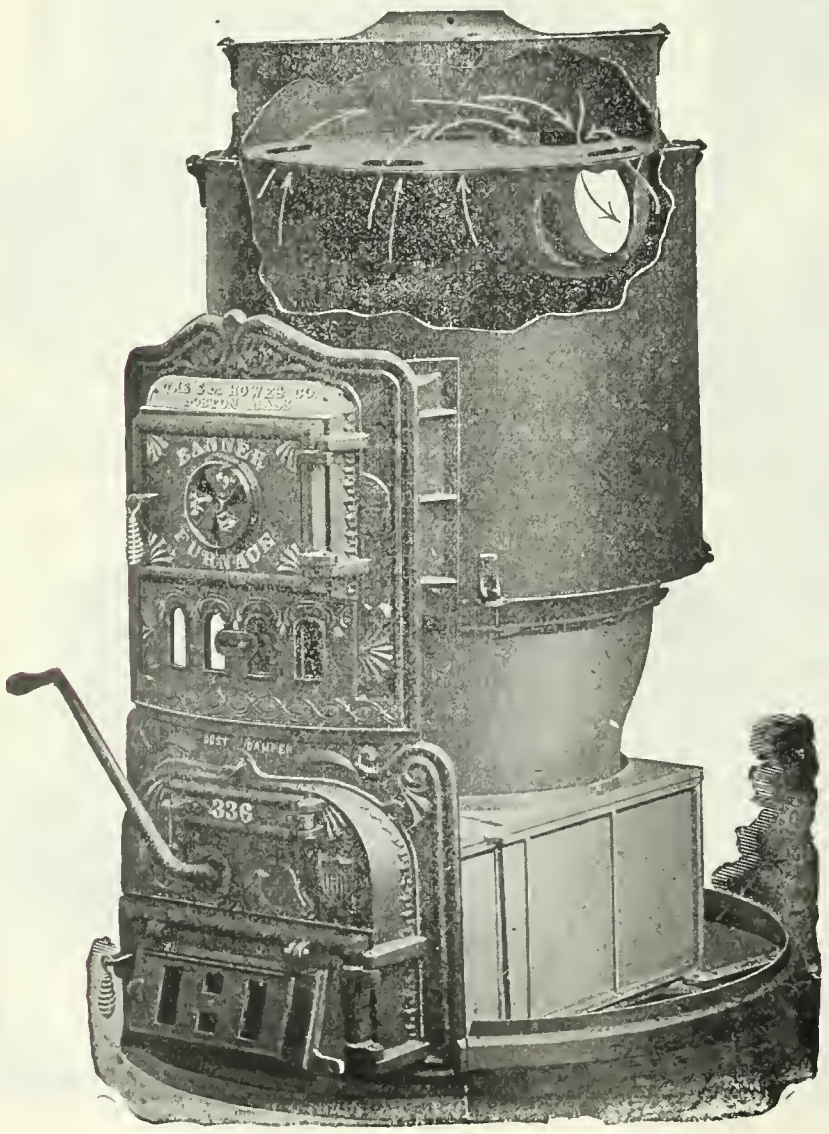
Forbes Furnaces Save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE AND PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

232 Quarry St., PHILADELPHIA, PA.

BANNER FURNACE IMPROVED FOR 1901



Deeper Ash Pit
Solid Front Shield
Triangular Grate

The original Banner Furnace has been universally acknowledged to be unexcelled as a heater. Banner Furnaces have been on the market eight years and have proven themselves strong and durable.

Time Tested

Modern Construction and Durable

Of Great Capacity

Very Low in Price

PUT A SAMPLE ON YOUR FLOOR

They are as Salable as Heating Stoves

THE S. M. HOWES COMPANY

40, 42, 44, 46 Union Street

BOSTON, MASS.

Magee Furnaces Sell Themselves

—almost. Don't you know there are lots of people who don't care to know anything more about a furnace than that it's a Magee? Their parents—many of them—used Magee Heaters, and their grandparents, too. They have never heard anything but good about Magee Heaters. They feel that when they get an apparatus with the name

Magee HEATERS

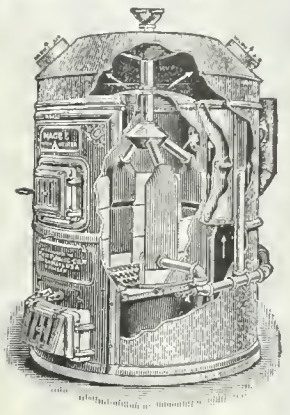
on it they're getting "a sure thing." Dealers who handle Magee Heaters know there's more than "talk" in this argument.

The Best 50 Years Ago.
The Best To-Day.

MAGEE FURNACE CO., Boston, Mass.

Makers Highest Grade Heating and Cooking Apparatus.

BOSTON HEATER "A."

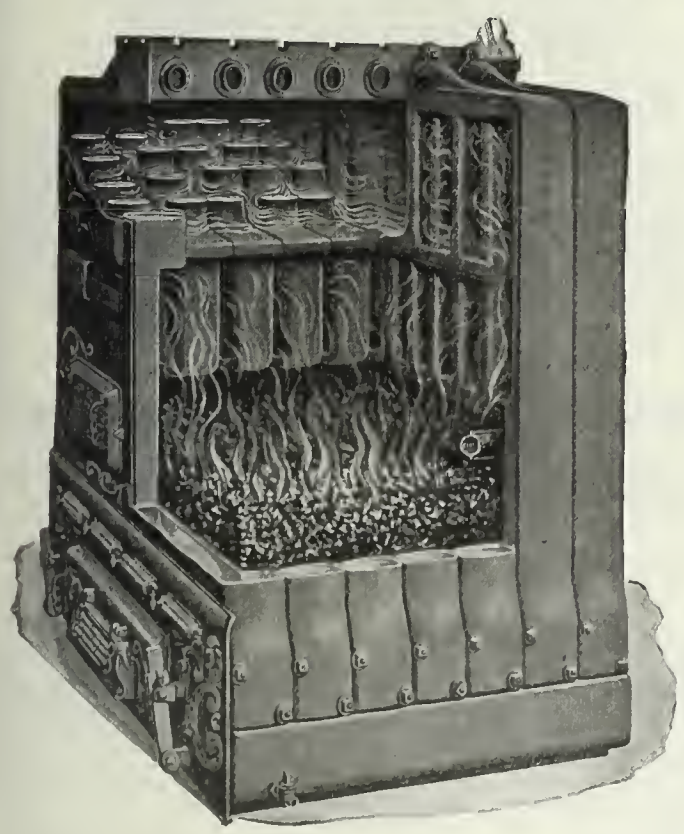


Warm air alone or in combination warm air and hot water.

MYSTIC HOT BLAST.

For warm air alone. Built in 6 sizes.

HENDERSON THERMO HEATER



Has many excellent talking points, not mere points to talk about, but decided advantages that the house owner appreciates and will pay for. It is easy to handle, easy to erect, easy to operate, durable, and, in case a section breaks, temporary repairs can be made in an hour or two, and the heater used while new parts are being procured.

The exclusive sale of our heaters in your city is sure to become profitable.

Now is the time to secure it.

The Prizer-Painter Stove and Heater Co.

READING, PA.

New York Sales Agency, PHELPS BROS., 284 & 286 Pearl St.

Boston Sales Agency, BIXBY & EDDY, 215 Franklin St.

Royal Heaters.

MANUFACTURED BY THE

HART & CROUSE Co.

UTICA, N.Y.

ALL THE LEADING LINES OF

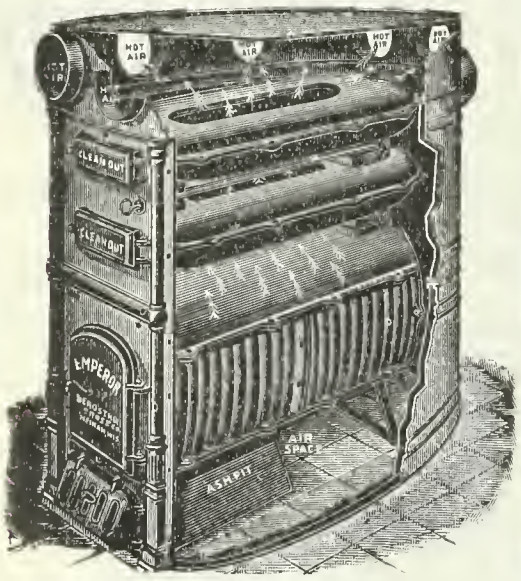
STEAM, HOT WATER & HOT AIR,

FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST. N.Y.
COLUMBUS, O.

BRANCHES.

79 LAKE ST. CHICAGO.
ST. LOUIS.



Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing.

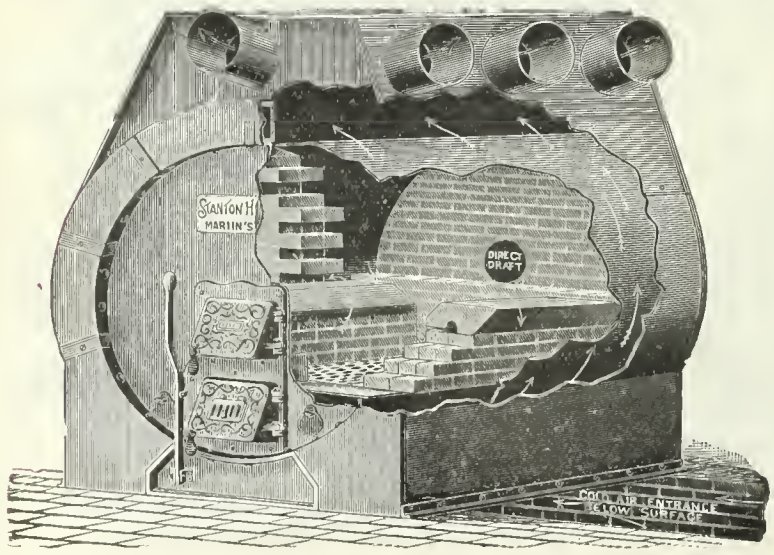
SEND FOR CATALOGUE.

Bergstrom Bros Co.

NEENAH, WIS.

The Stanton Seamless Heater,

PORTABLE CASED.



LOUISVILLE, KY., Apl. 5th, 1901.

THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

Gentlemen:—Your favor of the 3d inst is received asking our experience with the Stanton Heater which you put in for us during the fall of 1899. In reply we will say that it gives us pleasure to express our entire satisfaction with this Furnace. While we have had no severe weather this winter there have been several quite cold snaps, but our offices have been very comfortably heated, and our coal bill (Pittsburgh coal) has been quite moderate compared with other Heaters we have used.

The satisfaction the Heater has given us can be best expressed by saying that we have not heard the Furnace mentioned once this winter. You can see, therefore, that we have had absolutely no cause for complaint.

Yours very truly
ROBINSON-HUGHES & CO.

SEND FOR CATALOGUE.

THE STANTON HEATER CO.,

Martin's Ferry, Ohio.

See our advertisement next week.

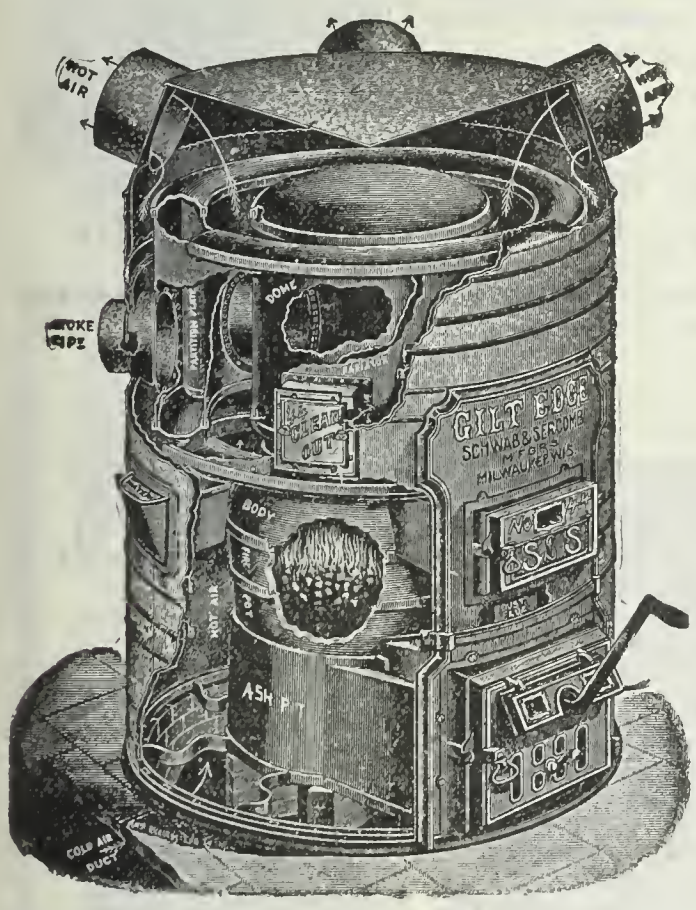
There are no dark flues or mysterious air passages in the "DIGHTON" Furnace.

It sells for its real value as a heating apparatus, not on a theory as to what a fantastic construction ought to do. It's just as simple as a strong heating furnace can possibly be built and accomplish the best results with less fuel than another would require to do the same work.

There is no guessing as to the heating capacity of the "DIGHTON." Wherever a 20, 22 or 24 inch pot of any other make has ever done or would do the work, you can guarantee the "DIGHTON" to do it better and with less fuel.

Some dealers now sell from 15 to 25 furnaces a season that didn't think there was any money in the furnace business until they used the "DIGHTON."

DIGHTON FURNACE CO., Taunton, Mass.



Gilt Edge Warm Air

AND

Combination Heaters

are leaders embodying points of furnace excellence possessed by no other furnaces. A large variety of sizes and styles, each especially adapted for a certain class of fuel. We are manufacturers of a complete line of warm air registers, safety pipe and tin galvanized iron furnace fittings.

R. J. Schwab & Sons Co.,

MILWAUKEE, WIS.

KEEP UP WITH THE PROCESSION.

CONTRACTORS USING OUR BOILERS

Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

If this interests you drop us a line and receive our NEW Catalogues and Prices.

KEWANEE BOILER COMPANY

Home Office and Factory,

Chicago Store, 169 Lake St. KEWANEE, ILLINOIS.

HOT WATER AND HOT AIR

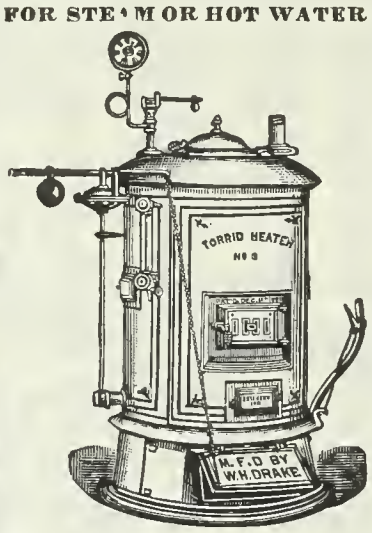
HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

"TORRID HEATER."
FOR STEAM OR HOT WATER



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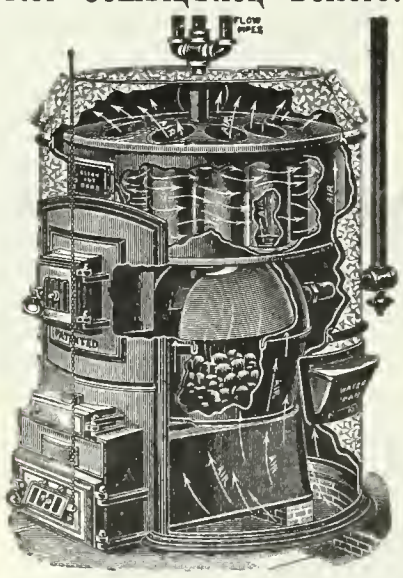

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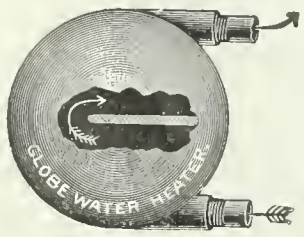

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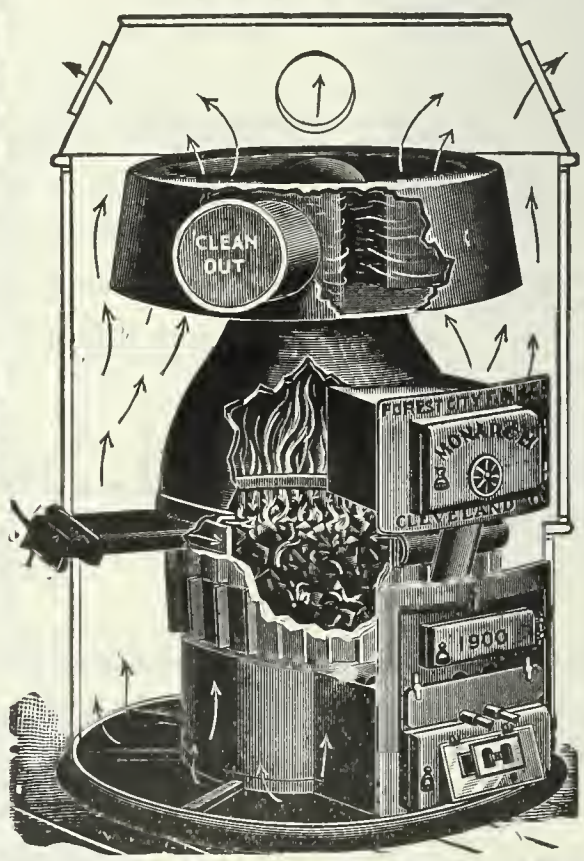

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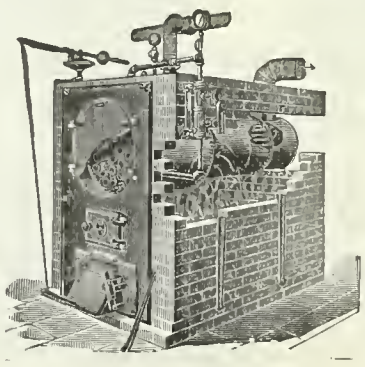

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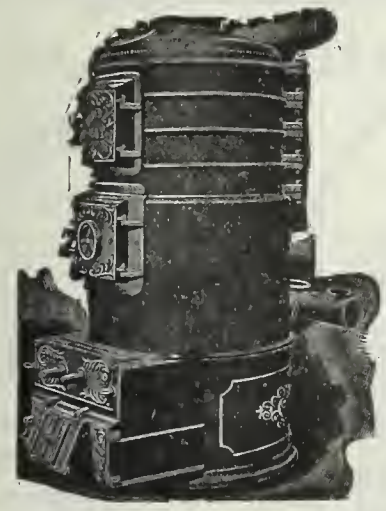

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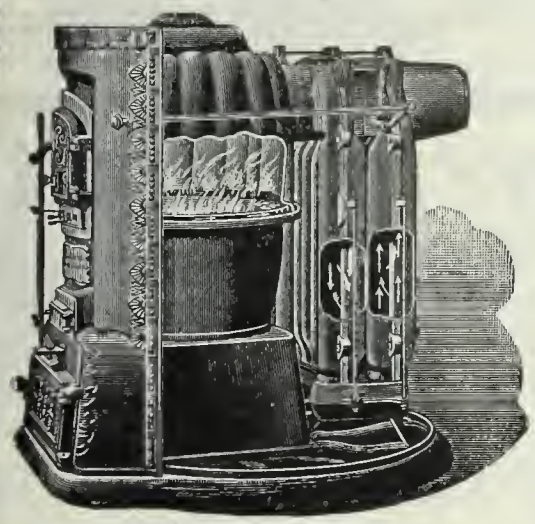

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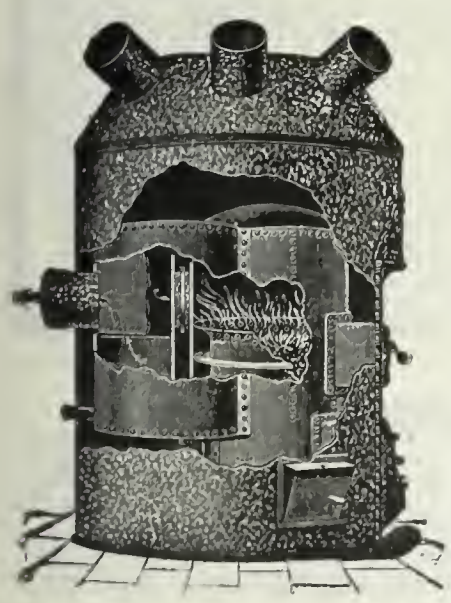

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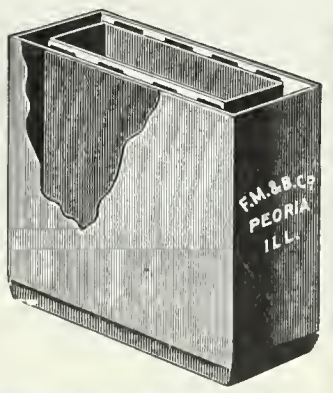

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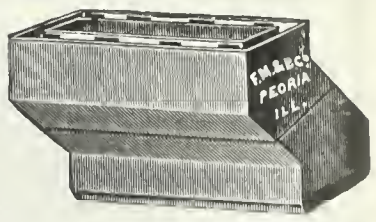

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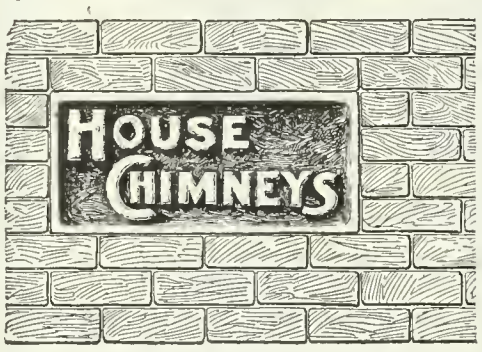

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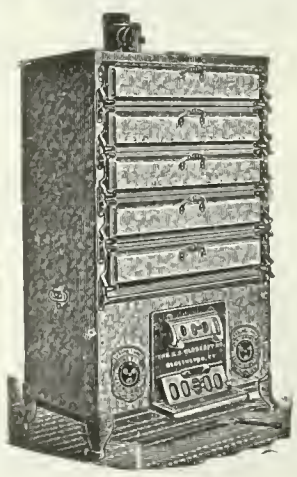

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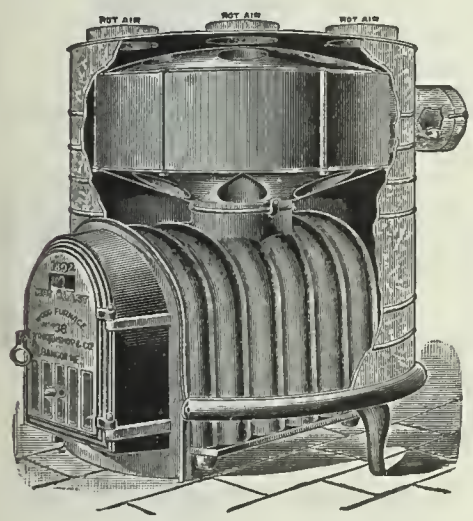

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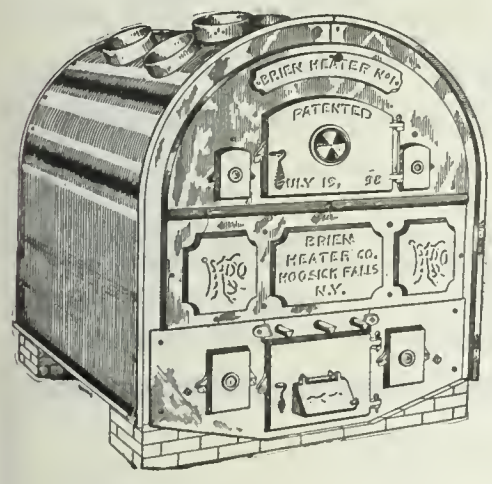

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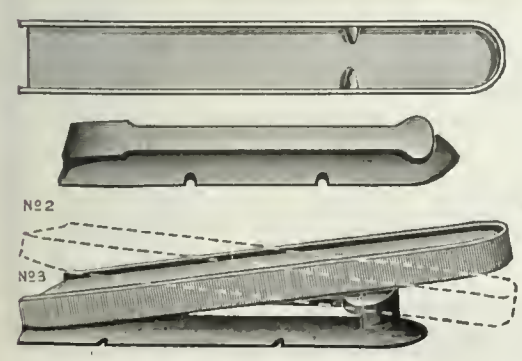

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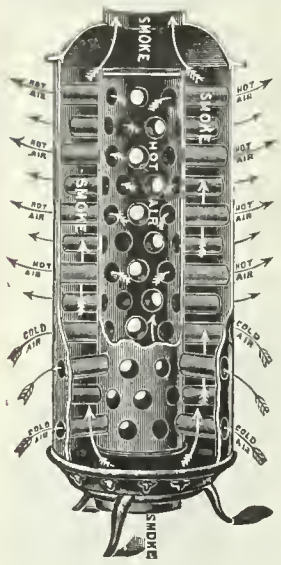

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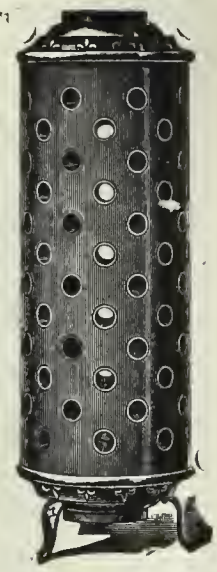

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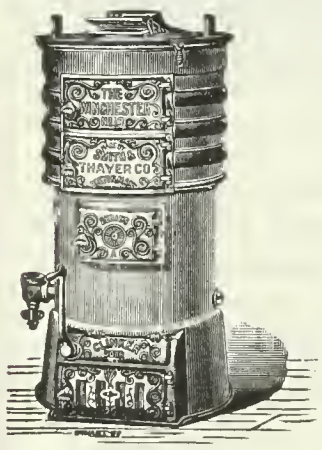

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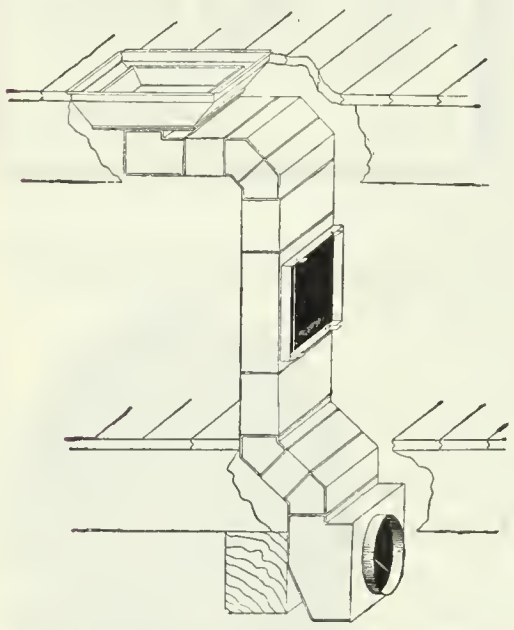

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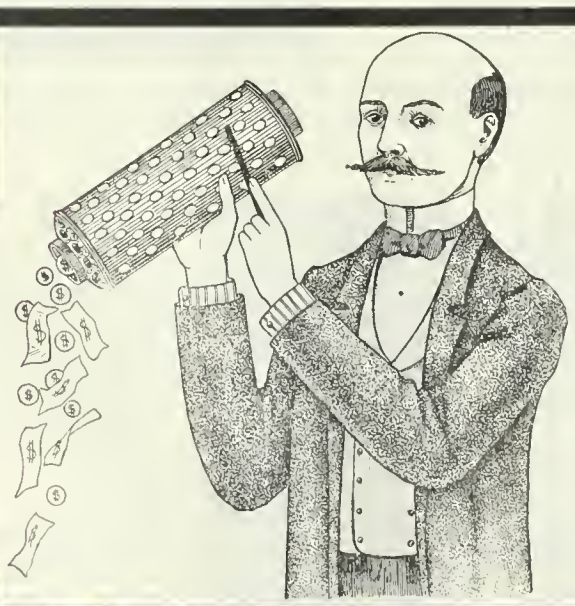

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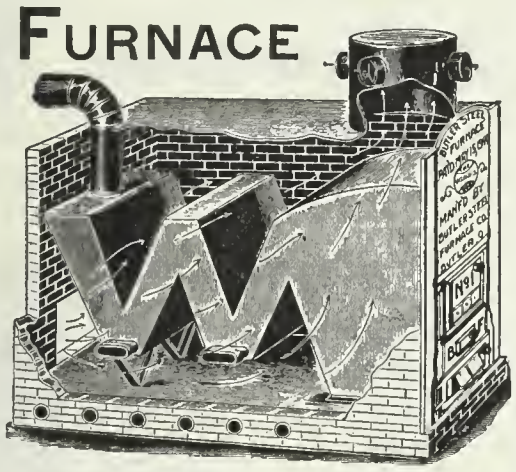

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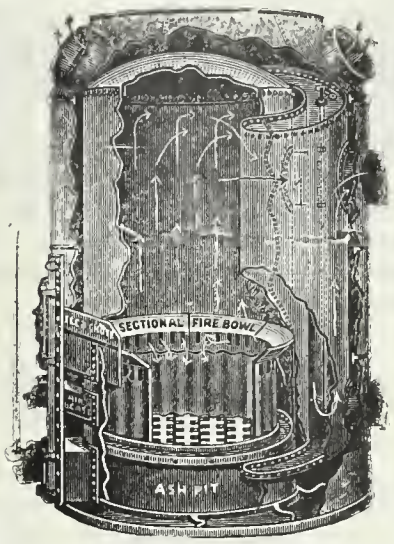

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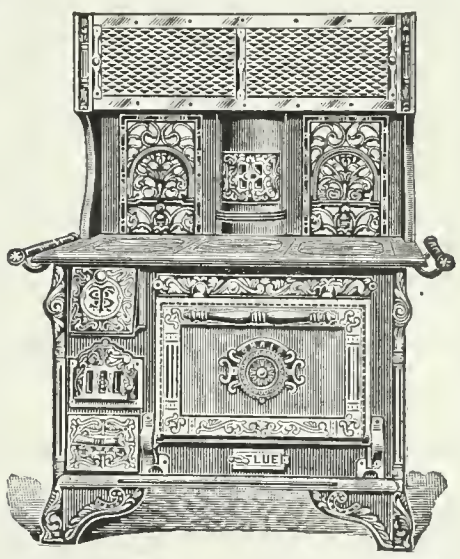

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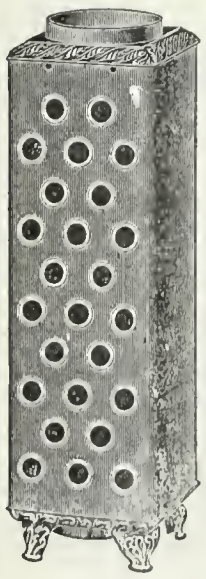

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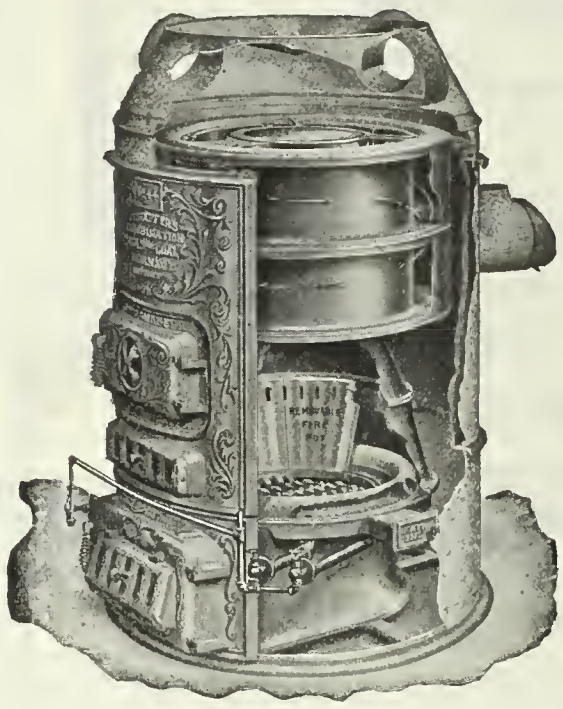

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A Burning Question??

Does the amount of fuel your heating apparatus burns interest you? If so our line cannot be overlooked. . . .

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Amherst,
Humber,
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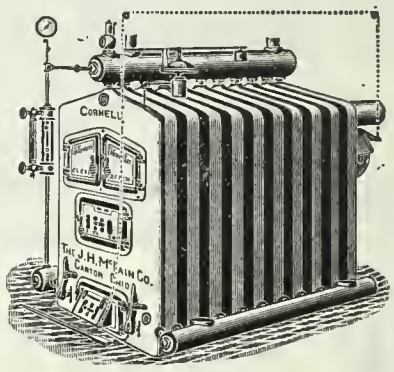

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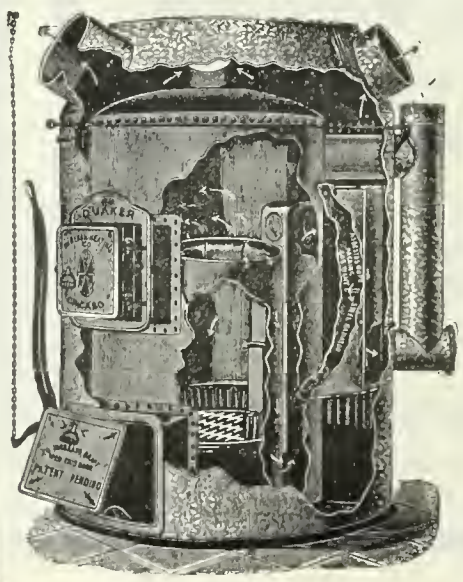
Cambridge,
Oxford.

The amount of fuel used, for the efficiency rendered, is a strong point with us. You can burn any kind of coal, wood and gas, and Cost, Comfort and Convenience are told about in Catalogue "C." Don't you want it?

THE J. H. McLAIN COMPANY.
Factory and Main Office, CANTON, OHIO.
Branches: NEW YORK. PHILADELPHIA. CHICAGO.



The THREE requirements for a first-class furnace are ALL Incorporated in the

NEW QUAKER FURNACE

Viz.:

ECONOMY in FUEL.

ECONOMY in TIME spent in caring for the fire, and

ECONOMY in REPAIRS.

Drop us a postal and we will tell you all about it.

WIRETON HEATING CO.,
Main Office and Works,
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Chicago Office, 40 Dearborn St.

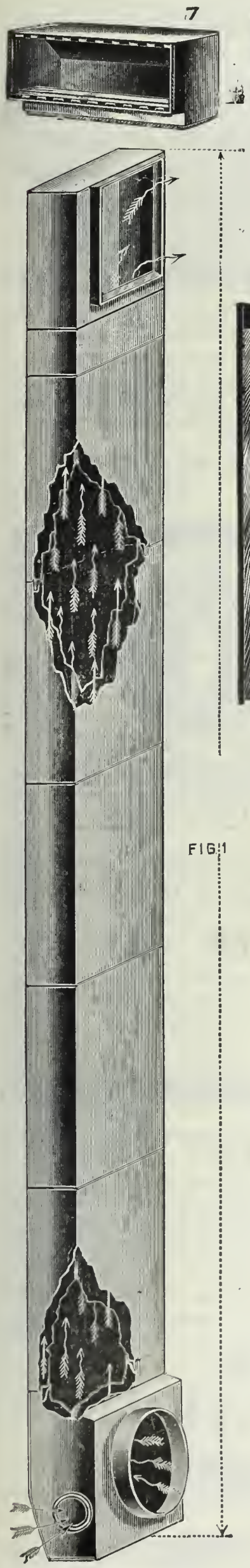


FIG. 1

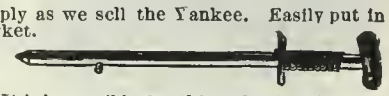
Sizes: 6, 7, 8, 8½, 9, 10, 10½, 11, 12, 12½, 14 and 15.

The YANKEE Hot Air DAMPER (Improved All Steel)

THE YANKEE EXCELS.

Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod Same size of holes are punched on each side of pipe Rod is made of ¼ inch cold rolled steel and slips into damper very smoothly. **Sample sent to any Dealer without charge.**



It is impossible for this rod, when in position, to move either way.

The S. M. HOWES CO., Manufacturers, 40-46 UNION ST., **Boston, Mass.**

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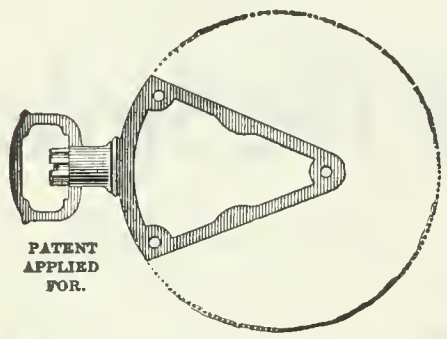
DAMPER CLIP.



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Planished and Sheet Steel will be scarce

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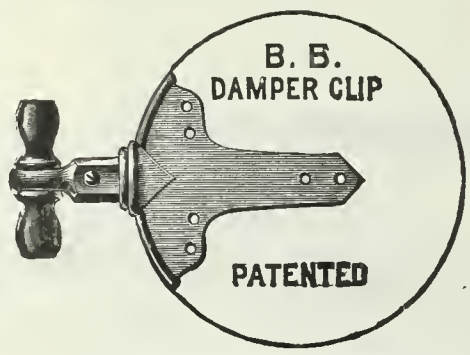

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To remove Handle, simply loosen Nut *half way*—unnecessary to remove Bolt.

BEST AND CHEAPEST.

Send for Sample and be convinced.

All kinds of Dampers—Plain, Uncle Sam, American and others always in stock.

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Game Stove Pipe Dampers and Clips.

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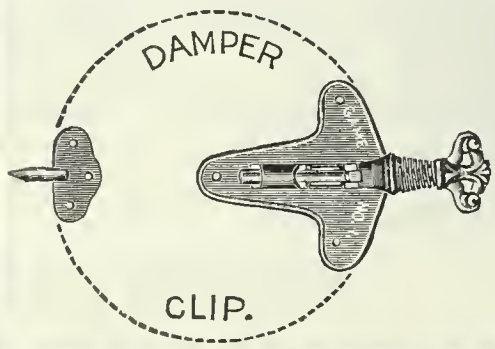

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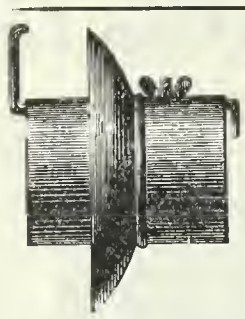

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Is made 9⅛ inches long, each joint is ready, fitted with fastening device, and beautifully designed gilded collar, which measures 10⅛ inches in diameter for the six inch pipe, and 11⅛ inches in diameter for the seven inch pipe. Is sold with a guarantee that it will hold the stove pipe firm to the flue, and at the same time the pipe will not go in flue over 4 inches. Is absolutely tight and will not come loose. They are packed a half dozen, complete, to each crate.

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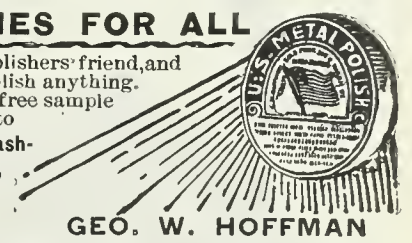

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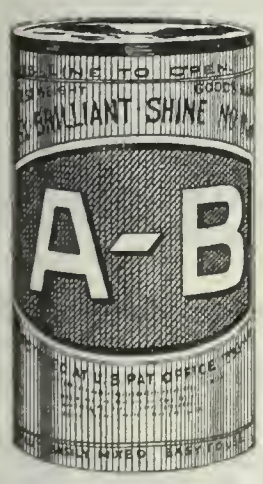

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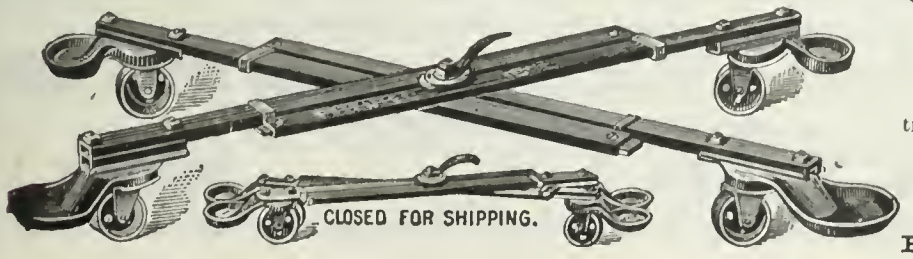

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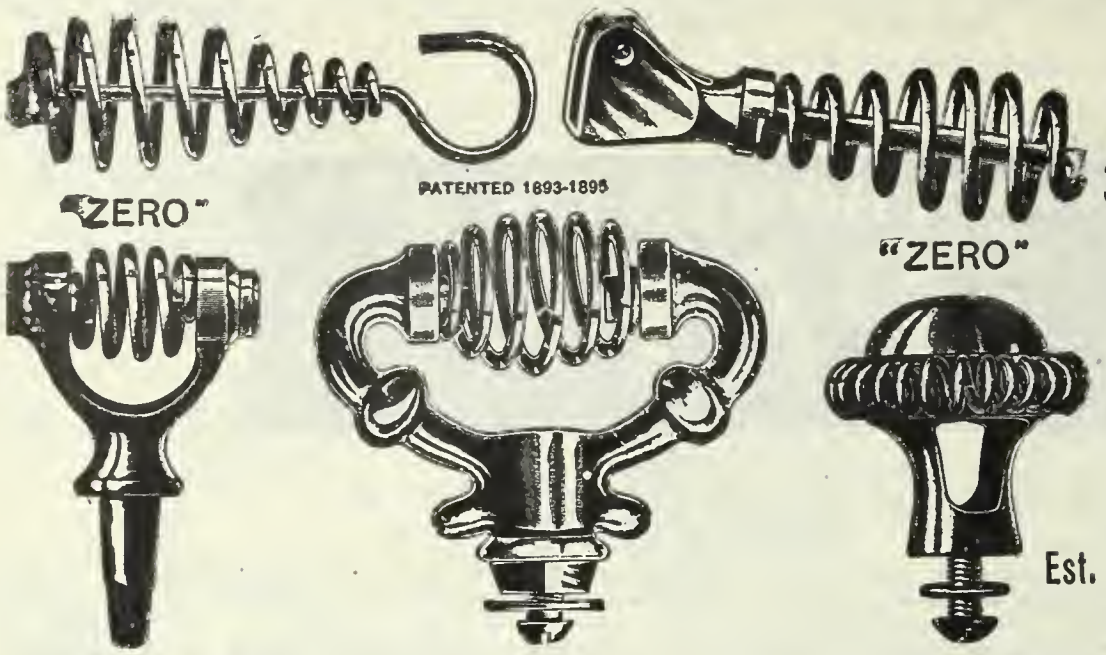

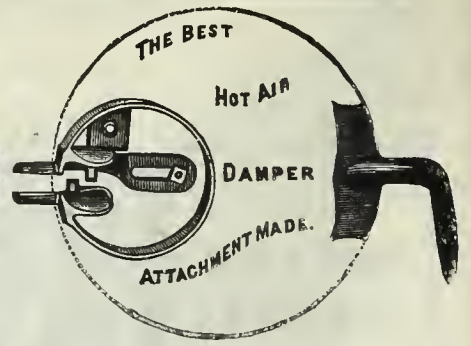

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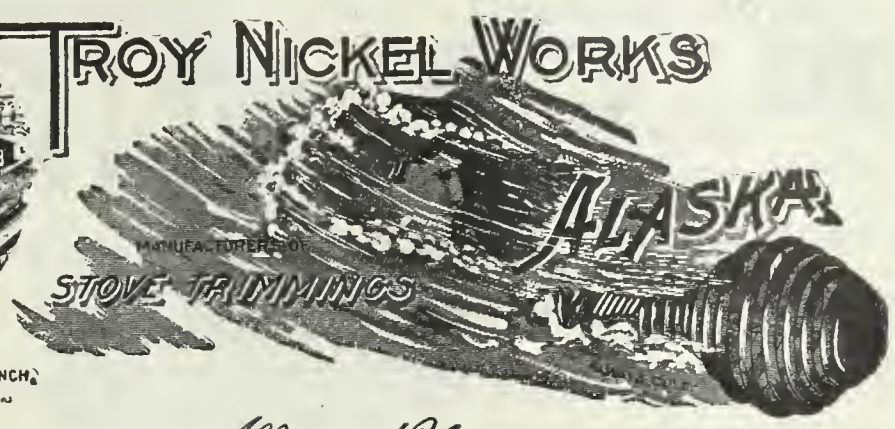

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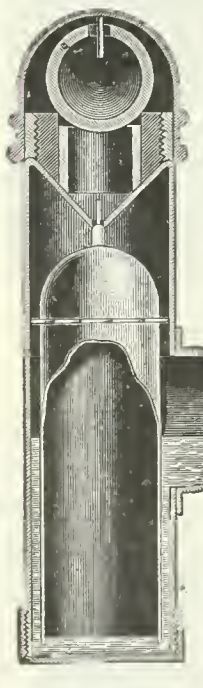

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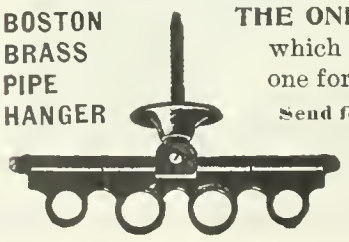

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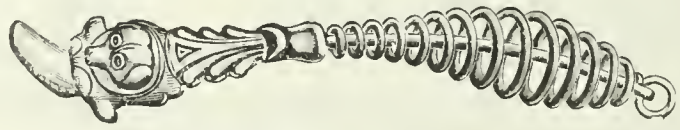

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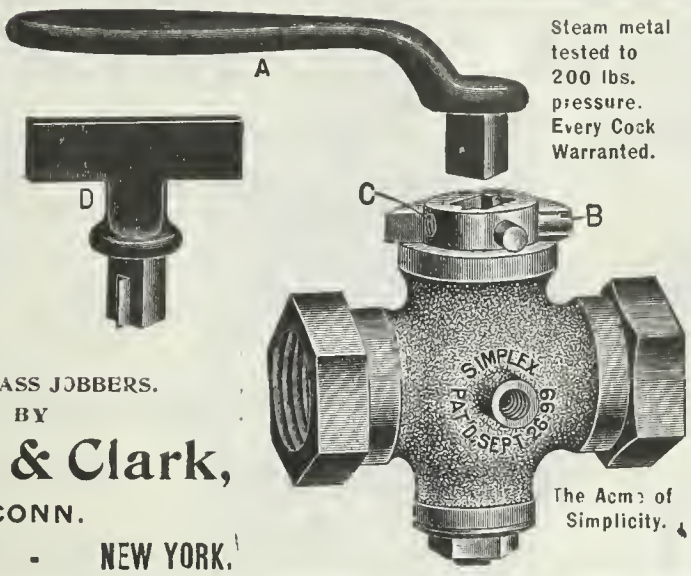

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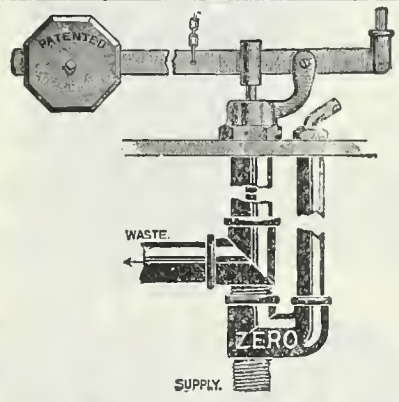

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The expense of installing closets by getting

Zero Anti-Freezing Valves.

They can be put in with half the time and half the labor because they do not require a pit or vault

They are simple and durable in construction—made without screws, springs or pins

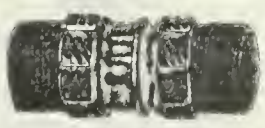
Zero Valve & Brass Mfg. Co.,

296 Seneca St., Buffalo, N. Y.

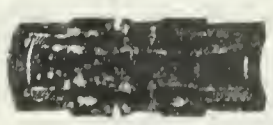
THE MEILINK

HOSE COUPLING

FITS ANY SIZE HOSE, 2, 3 OR 4 PLY.



A glance at the illustrations will indicate its superior advantages over any other similar device now on the market. Anyone can attach it instantly. Provides a positively tight joint. Easily taken off or put on. Never loses the washer. Won't tear up the lawn



THE BEST THERE IS.

The better you satisfy your trade the better they will satisfy you.

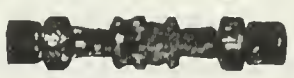
Try a Sample Dozen.

THE

Meilink Mfg. Company,

TOLEDO, O.

Write for Prices and Discounts.

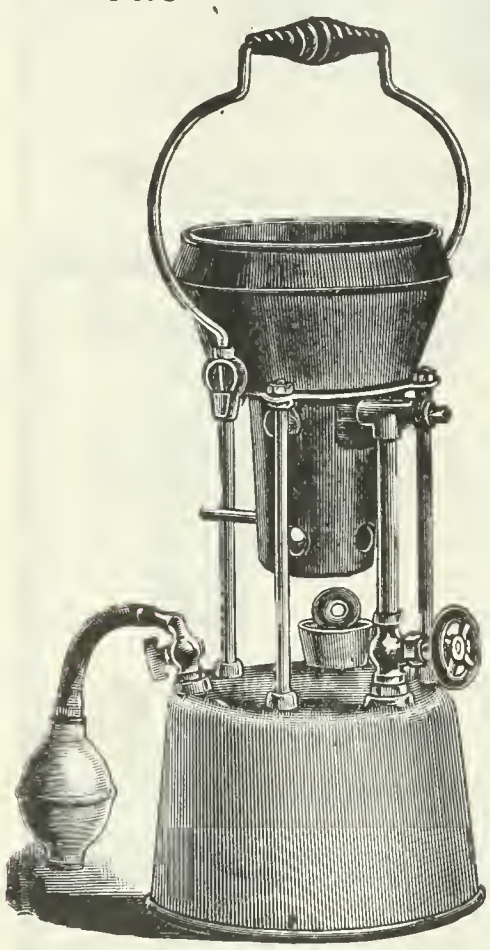


L. WOLFF
Manufacturing Company.

General Office,
93 W. Lake Street, CHICAGO.

WOLFF'S IMPROVED PLUMBERS' FURNACE,

The "DURO."



THE "DURO" "F" 1241.

PRICES UPON APPLICATION.

Quantity shipments are packed in cases 6 and 12 furnaces each.

The "DURO" Plumbers' Furnace

Has Drawn Steel Reservoir
Heavily Galvanized.

Drawn Steel Coil Cup.
Wrought Steel Bottom.
Patent Wire Handle.
Improved Filling Plug.
Safety Air Cock Joints.
No Cast-Iron Parts.

It weighs less than any other Furnace now in use.

In placing on the market

Our Improved Plumbers' Furnace

we have fully succeeded in producing *the best furnace made.* Most perfect in every detail. Of the highest efficiency. In operation, positive and reliable. Of substantial construction; combining lightness, strength and durability, at no more cost to the trade than the old style.

All component parts are interchangeable, being accurately made and fitted before shipment.

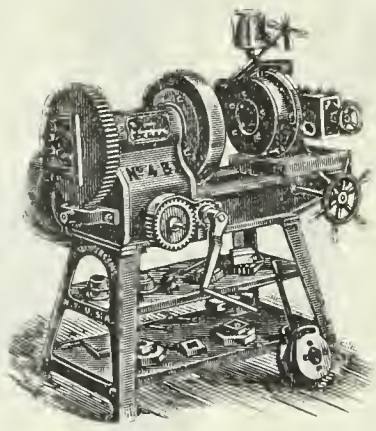
Illustrated Catalogue and Price-List sent upon application.

Hand Elevators and Dumbwaiters

made to be sold by the Hardware trade. Can be placed in position by any carpenter, Catalogue free.

ENERGY ELEVATOR CO.,
410 Cherry St., Phila., Pa.

D. SAUNDERS' SONS,



No. 4 B Machine, ⅛ to 4 inch. Hand or Power.

MANUFACTURERS OF

PIPE CUTTING AND THREADING MACHINES.

All sizes ¼ inch to 18 inch for Pipe Mill, Gas and Steam Fitters' use. Tapping Machines for Steam-Fittings, also

Steam and Gasfitters' Hand Tools.

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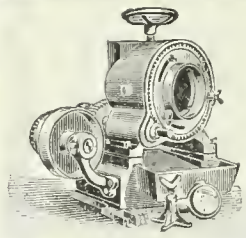
FORBES PATENT DIE STOCK



FOR HAND OR POWER.

Occupy less floor space, require less power to run, more simple of construction, far cheaper than any other machine of same range.

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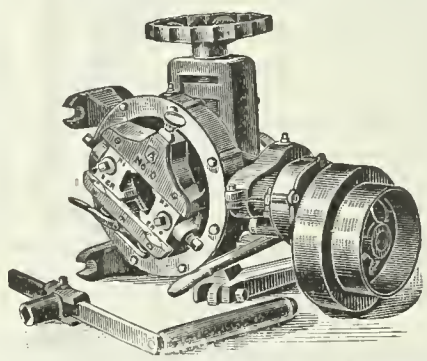
THE CURTIS & CURTIS CO., 56 Garden Street, BRIDGEPORT, CONN.

WE BUILD A SUPERIOR LINE



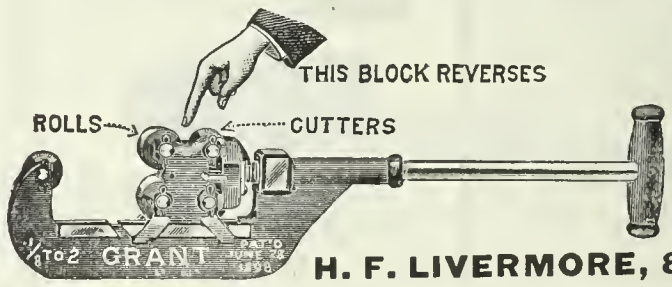
of PIPE THREADING,
and CUTTING OFF
MACHINES, (Hand or Power,)
STOCKS, DIES and other Tools
For
WATER, STEAM and GAS FITTERS.

—— CATALOGUE? ——

THE ARMSTRONG MFG. CO.,

No. 0 Threading Machine, Power Attachment. 139 Centre St., New York. BRIDGEPORT, CONN.

THE GRANT CHANGE PIPE CUTTER.



ONE IS ENOUGH TO CARRY.
CUTS FROM ⅛ TO 2 IN.

Cuts with 3 cutter wheels, or with 1 cutter wheel and 2 rolls.

Changes Instantly.
Strong, light and simple.
Nothing to get out of order.

H. F. LIVERMORE, 81 Pearl St., Boston.

TRIMO PIPE CUTTER

Decided improvement. Less friction. Can be changed from a roller to a three-wheel cutter. Extra wheels in the handle. Send for catalog.

TRIMONT MFG. CO., Roxbury, Mass., U.S.A.

COLWELL LEAD CO.,

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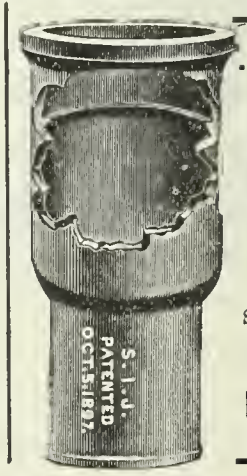
Manufacturers of

LEAD PIPE, SHEET LEAD, SHOT,

And Sellers of

Everything You Want for Plumbing.



SISSON INSERTABLE JOINT

FOR SOIL PIPE.

Sizes, 2 to 6 inches.
Light and Heavy.
Saves labor, expense, and makes a neat job.
SEND FOR CIRCULAR.

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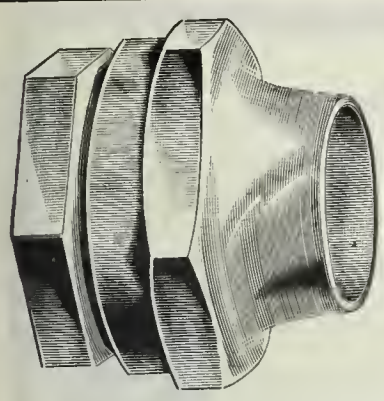

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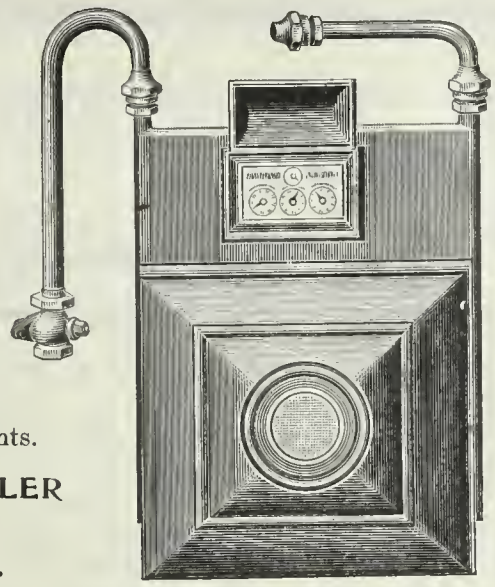
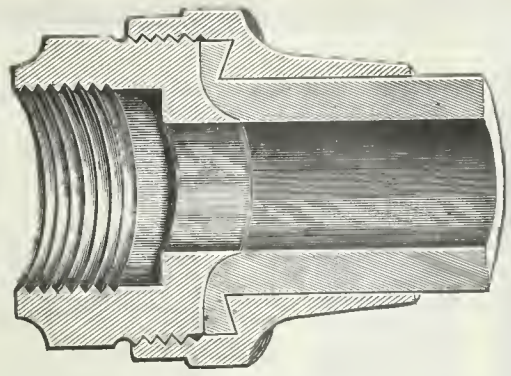
A Perfect Substitute for Wiped Joints.

WATER BACK, FAUCET, BOILER COUPLINGS, ETC.

Send for Complete Catalogue.

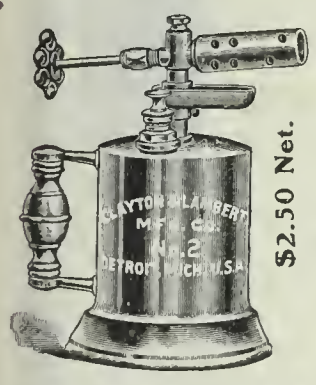




Sectional View.

All Gas Companies that use lead pipe, lead to lead or lead to iron, can save time and money by using the "NOVELTY FITTINGS" in setting their meters and for other purposes.

THE NEW HAVEN NOVELTY MACHINE CO., New Haven, Conn., U. S. A.



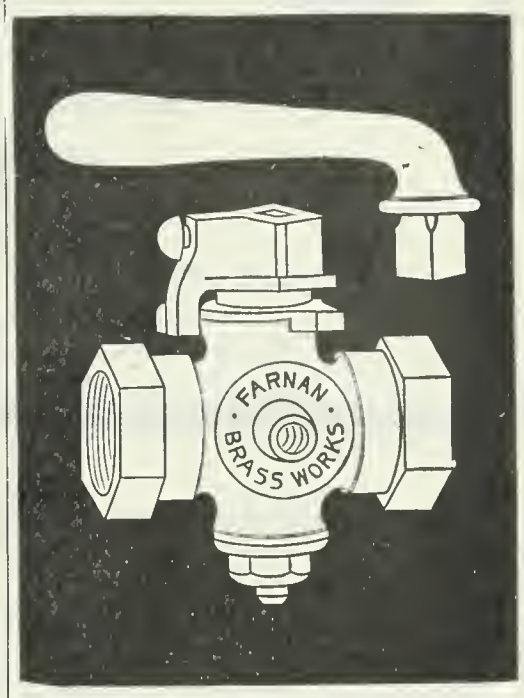
$2.50 Net.

The No. 2 Torch.

In the No. 2 we are offering you a quart size torch, having every **improvement** that **improves.** A brass air pump of the latest design screws into the tank, which protects it from injury. The burner used is a strong generator, producing a clear, blue, flame, using very little gasoline. In fact, **the user will soon save the cost of the torch in the saving of gasoline alone.** Jobbers supply at factory price, or we will send by paid express on receipt of $3 25.

CLAYTON & LAMBERT MFG. CO., Detroit, Mich.

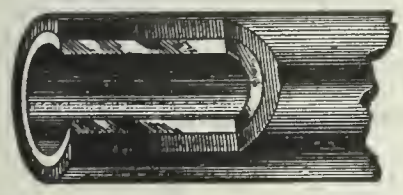
FOR HIGH PRESSURE



FARNAN BRASS WORKS,
CLEVELAND, OHIO.

TIN LINED IRON PIPE.

LEAD LINED IRON PIPE.



This lining cannot be torn from the pipe.

Some of its uses are for

HOT WATER PIPE.
SERVICE PIPE.
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SUPPLY PIPE.

Ice Machines. Refrigerating, Bottling and Carbonating Condensers, Automatic Sprinkling System.

LAMB & RITCHIE, CAMBRIDGE, MASS., U. S. A

VANDERMAN'S

Adjustable Fitting

FOR

Soil Pipe Connections.

MODEL FITTING
Sent on Application

SEND FOR PRICE.

☞ Freight allowed on assorted lots of twelve East of Mississippi River.

Send for "A" Catalogue Showing large line of

Plumbers' Specialties.

THE VANDERMAN PLUMBING & HEATING CO.,
WILLIMANTIC, CONN., U. S. A.

FOSTER'S NevRleK

BALL COCK

For Water Closet Tanks.
40,000 IN USE.
Send for New Catalogue.
F. W. FOSTER MFG. CO.,
12 Portland St.,
BOSTON, MASS.

Leather and Rubber

WASHERS,

Machine cut, at less price than can be cut by hand. Send Sample for prices.

I. G. MARSTON & CO,
200 Ruggles St., Boston, Mass.

ALWAYS IN STOCK.

ALL SIZES OF

Galvanized range boilers, expansion tanks and boilers with copper tube coils inside for heating water by steam.

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Office 50 Cliff St., New York City.

GALVANIZED STEEL and WOOD TANKS.

All sizes and shapes.

J. H. EDWARDS,
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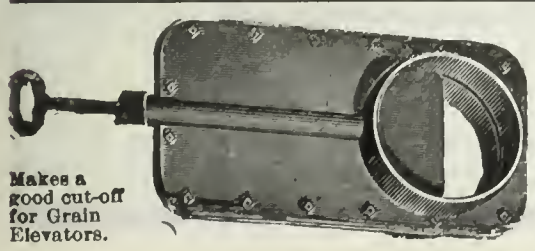


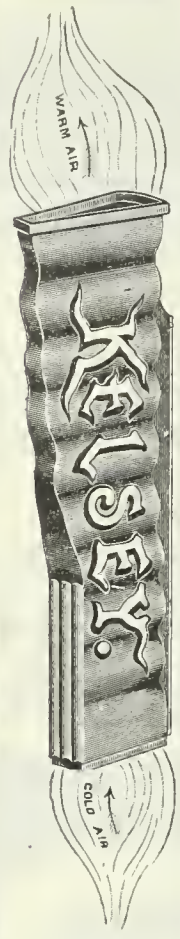
Makes a good cut-off for Grain Elevators.

IMPROVED WIND-GATE

SEND FOR PRICE-LIST AND DISCOUNT TO

MINER & PECK MFG. CO.,
NEW HAVEN, CONN.

WATER SUPPLY BIG VOLUME LIFTS
L. E. RHODES CO
HARTFORD, CT



The Kelsey Warm Air Generator

Study the construction of the Kelsey and the principle employed in warming the air, and you will be convinced of its efficiency.

In the Kelsey the air is warmed thoroughly and evenly by passing in separate channels through the cast iron sections.

There are from nine to seventeen of these sections in a Generator, according to its size.

Each section weighs about 70 pounds, and has 8 square feet of heating surface.

These immense surfaces and this great weight of cast iron, being in direct contact with and over the fire, are kept heated to any required degree, with a most economical consumption of fuel.

The Kelsey Method of Warming the Air Is the Best Method. ***Send for Booklet.***

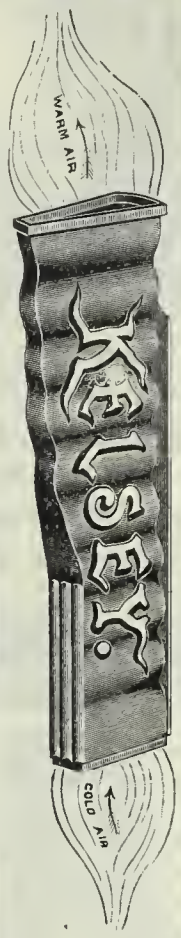
Kelsey Furnace Co., Makers,

MAIN OFFICE,
SYRACUSE, N. Y.

NEW YORK OFFICE,
239 Water St.

JAMES SMART MFG. CO.,
Brockville, Ont.,
Sole Manufacturers for Canada.

COOK & VAN EVERA CO.,
38-40 E Lake St., Chicago, Ill,
Western Selling Agents.



Brilliant Enameled Steel Ware

This ware is now manufactured by our factory at Bellaire in the Brown Color only, same having been discontinued in all colors by our Portland, Conn. factory. Particular effort is being made to turn out a highly satisfactory and pleasing article, and all dealers are requested to order a sample lot to be convinced of the merit of this ware.

White and White Enameled Steel Ware

This ware will also be made by our Bellaire Factory only hereafter having been discontinued by the Portland Factory. A large line of hospital goods made in this ware Recommended where sanitary qualities are essential.

National Enameling & Stamping Co.

BRANCH OFFICES New York Baltimore Chicago St. Louis Milwaukee ADDRESS OFFICE NEAREST YOUR LOCATION

THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, August 31, 1901.

DAVID WILLIAMS COMPANY, - - PUBLISHERS.

BUSINESS OFFICES:

NEW YORK.....232-238 William Street.
PHILADELPHIA.....117-119 South Fourth Street.
BOSTON.....33 Mason Building.
PITTSBURGH.....Room 509 Hamilton Building.
CHICAGO.....1205 Fisher Building.
CINCINNATI.....Rooms 22-24 Pickering Building.
ST. LOUIS.....1205 Chemical Building.
CLEVELAND.....312 The Cuyahoga.
LONDON.....Hastings House, Norfolk St., Strand.

Volume LVI.....No. 9
Index to Reading Matter.....Page 60

Freight Charges and Back Orders

Many merchants doing a business of moderate extent do not give to freight matters the attention they deserve. The cost of getting in stock is one of the very important items in doing business, and one where judgment and watchfulness are needed and are paid for in the dollars saved. Each individual item in the freight account is small, but the year's total is a goodly sum, even where every care has been exercised. One of the small leaks in business comes from "back orders," or the inability of the house to whom the order is sent to ship it complete. Such items as are short are put on what is called the "back order book," to be forwarded later, when new stock is received. Perhaps the freight cost of these back orders is the smallest part of the annoyance they cause. They probably are inevitable, but they are always irritatingly unwelcome. Very often, altogether too often, when an invoice is received, the dealer finds everything there that he was in no hurry for, while the one item most wanted has been put on the back order book. But in addition to the annoyance the back order causes it adds a great many small items to the freight account. It is not improbable that the day may come when a house that sends goods on a back order will be expected to pay the carrying charges on such shipment. In every way this would seem fair.

Some Kinds of Union Victories.

At a time when union labor is occupying a very considerable share of public attention and hot controversies on the merits of strikes are going on everywhere, it is not uninteresting to glance for a moment at what may be termed the humorous side of unionism—*i. e.*, the anomalies, approaching absurdities, that sometimes accompany a too literal carrying out of its rules and principles. The experiences in this line of a well-known manufacturing concern at Dayton, Ohio, following their recognition of union labor, are worth recording. The concern in question employed about 2500 laborers, skilled and unskilled, whose rights and comforts were their constant study. These workers were in the habit of boasting that they had a soft snap—good wages, short hours and every sort of advantage in the way of living and entertainment. The factory for many years was run on a nonunion basis, but a little over a year ago, at the request of some of their employees, the company consented to recognize union labor. Then their troubles began. In the first place, a walking delegate, in the course of his investigations, discovered that in the shower baths provided for the male employees of the company, the towels furnished by the concern were washed, at the company's expense, by nonunion washerwomen. As a consequence, the men were ordered by the union to supply their own towels and have them washed at their own expense, which was set down as a distinct victory for union labor. The same walking delegate shortly afterward learned that a spring on one of the mill doors was of nonunion manufacture. A secret conference ensued, and as the result of a protest the company had to remove the objectionable spring. This was set down as a further triumph of union principles. Yet later, some new machinery was introduced which did away with the services of half a dozen foundrymen. These men were laid off, and as a result, the entire force of foundrymen and metal polishers were ordered out on strike and the factory had to be closed down, throwing 2500 people out of employment.

Managers of Men.

There is one class of workers for whom a large and constant demand exists and who, therefore, need never starve for lack of employment. These are the men who have the managing faculty. Like the poet, the successful managers of men, as a general rule, are "born, not made." Their ability is rather intuitive than acquired. They have the faculty, knack, aptitude, call it what one will, of administration and leadership, which commands the respect of those they control. They are necessarily men of strong will, but are not arbitrary or oppressive in the exercise of it. Tact and good judgment are essential to the make up of such men. They must have a good understanding of men and be able to discriminate between those who must be driven and those who can be led, adapting their methods of dealing with each accordingly. To do this properly requires a close study of the dispositions of men, which the good manager will not fail to make. He must, moreover, so rule himself that he may pursue his course with even temper, never allowing his passions to get the better of his good judgment and strict sense of justice. Ruling by force of character and showing himself fair minded, sympathetic and devoted to his duty, he will command the respect and obedience of those under him. The domineering, passionate, arrogant slave driver may command men through fear, but he has no hold on them, and the moment they have the opportunity to do so they will rebel. He is not a good manager of men, although for a time they may obey him with alacrity. The really successful manager has his men so trained that they will do their duty as well in his absence as when he is present. A marked quality of such a manager is one that he shares with all the great men of history, the faculty of picking out good assistants and inspiring them to use their best efforts. This is not the least among the qualifications essential to good managership. A loyal, enthusiastic corps of lieutenants and a contented, cheerful rank and file of willing workers are secured by the methods above outlined, as used by the good manager, to the profit of all concerned.

Undeterred by the failure of the Pullman enterprise and the troubles at the cash register works at Dayton,

Ohio, J. E. Tilt, the president of a Chicago shoemaking concern, is reported to be planning the establishment of a model industrial town at Endicott, N. Y., on the Susquehanna River. Unlike most similar undertakings, the new town will have little or nothing in the shape of restrictions. Such ordinances as it will have will be made by the citizens. The company will not control the stores, franchises or privileges, and there will be no Sunday restrictions, nor will liquor be forbidden; neither will the formation of labor unions be discouraged. The company have contracted for the expenditure of nearly $3,000,000 in city improvements and will sell cottages to their employees on liberal terms. A factory to employ 2500 persons will be erected. Mr. Tilt disclaims any idea of philanthropy in connection with the scheme, but argues that, in providing the advantages referred to, the men will become better workers and so make the business more profitable and prosperous.. Having himself risen from the shoemaker's bench, Mr. Tilt thinks that he thoroughly understands the workingman and his needs.

A writer in the *Engineering Magazine* makes the point that Americans are extravagantly wasteful of the power which lies at their doors and which might be used with advantage. For example: While this country produces the greatest output of iron and steel, no engine driven by furnace gases is in practical use. In England, where the idea first originated, a few such engines are in operation, and also in France. The little principality of Luxemburg, with a population of only 236.000, has installed furnace gas engines to the extent of nearly 10,000 horse-power, while in Belgium there is 7000 horse-power and in Germany nearly 45,000 horse-power.

Many new and big things have had their origin in Chicago. The latest scheme that has been hatched in the Windy City is the establishment of a mammoth department store that will be open for business 24 hours a day. The project, it is said, is taking shape in a way that promises a successful start. It is in the nature of a co-operative movement among a number of the smaller merchants of the city, whose trade has been cut into by the large department stores to a ruinous extent. The company will be capitalized at $500,000 and the stock will be owned by the merchants in the combination. The intention is to have only one representative of a branch of business, who will be in charge of the department in which he is directly interested. From 30 to 50 separate departments are to be included, covering every line of commodities handled by the existing department stores. The idea of keeping the store open day and night is designed to accommodate every one, including thousands of people who work nights in the down town district of the city. Three shifts of clerks, each working eight hours, will be employed. By this means the promoters expect to be able to compete successfully with the regular large department stores.

The Anchor Line steamer "Ethopia," which arrived in New York on Monday, brought among her passengers 12 British workmen, who have been sent to tour this country and study at first hand the conditions of the American wage earners, how they are housed and live, their hours of labor, trades unions and other matters of interest. The expenses of the party are defrayed by one of the principal English newspapers. The men who have come over were selected from among different trades by popular vote. They include a carriage builder, a pottery and glass decorator, electrical and mechanical engineers, a locomotive engineer, a miner, a painter, a mason, an upholsterer, a weaver and a steel worker. They come from different parts of the United Kingdom. The party will visit Washington, Pittsburgh, Philadelphia, Cleveland, East Liverpool, Ohio; Buffalo and Ottawa and Montreal in Canada, remaining a few days in each city in order to study questions relating to labor conditions in which the British artisan is vitally interested.

Careful Buying for Plumbers and Metal Workers.

The letter signed by "Enterprise" that appeared in a recent issue of *The Metal Worker*, inquiring whether it would pay him to be a closer and more careful buyer, has brought many expressions of opinion from members of the trade in various parts of the country. The extracts given below discuss the subject in various phases:

BUYER'S DUTY TO BUY WELL.

An Illinois dealer thinks that it pays to look for low prices and that it is the buyer's duty to do so:

I have read the article, "Careful Buying for Plumbers and Metal Workers," in *The Metal Worker* of August 17, and will say I make it a custom to "figure around" some when in the market for a bill of sufficient size to warrant so doing, and find it pays to do so. I would recommend others to do the same. It can do no harm, and often results in getting better posted as to prices asked by various wholesalers. I think it is every buyer's duty to try and buy his goods where he can do the best.

* * *

DON'T SHOP AROUND.

A New Jersey dealer advises sticking to one reputable house:

We do not believe it pays to be continually shopping around. The average wide awake buyer has a pretty general idea of the market prices of the goods he handles, and can save time and receive better accommodation by sending his orders to some reputable house, who will soon learn just about what his needs are and can therefore fill his orders more satisfactorily than can be done by the shopping system.

* * *

EACH MERCHANT MUST DECIDE.

From Massachusetts comes the suggestion that any merchant can easily figure whether the extra time consumed in buying low is worth the saving in money. It is a proposition that each man must settle for himself.

In our opinion there is as much if not more in buying as in selling. Unless you are buying right it is hard to sell right, and make the profit that you ought to.

Will I stand as well with my jobbers and manufacturers? It will not make any difference in my standing, only they like to make as large a profit as they can. Buying as low as possible is business. And in order to do so you have to give some extra time and use a few postage stamps. As to the hiring of help to be able to give this extra time, each man must answer that question for himself. If he is doing a business that 5 or 10 per cent. more profit can be made out of by buying at the lowest possible price, the question is, will that pay him for the extra help and still leave him a little left over? We find that in our business it takes only a few minutes more time, and that it means dollars to us in a year. Some weeks careful buying earns a good week's pay for us.

* * *

FORCED TO BUY CHEAP GOODS.

An Indiana merchant prefers to buy everything of his jobber, but cheap competition compels him to purchase some inferior goods.

The question is one that is hard to decide. We like to treat our jobber right by buying of him when he calls. We can explain points personally which could not be understood otherwise. On the other hand, the "scalpers" who send out circulars and prices give much lower prices than our jobber. Your competitor will often buy his class of goods and will undersell you. As you don't want to go out of business, it frequently forces you to buy where you can buy the cheapest.

* * *

QUALITY AND PRICE THE ONLY CONDITION

An Iowa merchant always considers prices quoted in connection with freight rates, remembering that freight is part of the cost of goods:

I do not think the average retailer gives enough attention to buying. The small dealer's time is divided between so many details that buying is neglected. When a salesman comes in he buys quickly, as much to save time as money. It has been my experience in business that time spent in buying is the most profitable time spent.

Study your wants and study the markets.

Some articles you should buy at one place, some at another. Buy for quality and price, not out of friendship for a salesman. Study what you want and what you can use. Commence in time to buy season goods. Get prices, freight rates, &c. I have a price book in which I carry freight rates for all competing points. Quite often a price will seem low, but when freight differences are added the low prices will be high. A certain article may have one freight classification in State and another out of State. I also have a book of classifications in my desk for reference. These can be obtained from the general freight agent of the railroad on which you are located.

When a man's time is limited he must have everything in reach. It does not pay to be tied to any house or houses. What a retailer wants is to study his individual conditions and requirements, and buy regardless of where, letting quality and price be the only conditions.

* * *

NOT MUCH GAINED BY SHOPPING AROUND.

A New Jersey firm believe in sticking to one firm in whom they can place confidence, except when placing large orders.

In regard to careful buying, we would say that for the ordinary business man we do not think there is much gained by shopping around. By trading with a good reliable firm in whom we have confidence we can do as well, and perhaps keep in better standing with the trade. Of course, in buying a large quantity of a certain article it pays to look around.

* * *

STICK TO YOUR FRIENDS.

A North Carolina merchant advises sticking to jobbers who treat customers fairly.

I think that in buying goods, when you have good old friends and reliable houses to trade with that look after your interest as well as their own, it pays to stick to them as long as they sell as cheaply as elsewhere. Very often there comes along a salesman who offers to cut prices on some things, selling other lines higher. I have been trading with several firms 25 years, but I always write everywhere for prices and keep posted, and buy from the reliable firms selling the cheapest. The cheapest is not always the best.

* * *

PAY PROMPTLY.

From Illinois comes the following expression in favor of close buying and prompt pay:

Too much care cannot be taken in acquainting yourself with the changes in prices, so that you can know if you are buying intelligently. It is not careful and close buying that will injure the standing of the buyer with the jobber and manufacturer, but careless and unintelligent buying. Prompt paying of bills will protect the standing. So much of the profits now depend upon the buying and discounting that neither should be neglected.

I consider your paper very helpful and reliable in buying.

* * *

HOLD SELLER RESPONSIBLE.

From Michigan comes the advice not to try to buy too cheaply, but pay the fair price and hold the seller responsible:

The writer pretends to be what is termed a "close buyer," but the writer of the article referred to gets at the meat of the thing when he asks "Will it pay him to try to get lower prices?" There are a great many ways in which he can lose the little differences there may be in price. He can apply the principle to his customer. Can he satisfy himself that the customer who endeavors to get a cheaper price from him always saves money by this mode of dealing? Are there not times, to say nothing of the deception there may be in quality, when the matter of getting prompt shipment, or a great many other little favors, of which he may not be aware, will outweigh the difference in price? I take it that the jobber or manufacturer is but human, and a great deal like the retailer. Which customer will he endeavor to protect—the one that wants honest goods at honest values, or the one that would like to get something for nothing? It has been my experience that watching the markets carefully, buying at as good prices as are offered, not haggling over an extra 2½ or 5 per cent., but rather throwing the responsibility on the seller and not kicking when you have no reason will obtain the best all round results.

* * *

GET TWO OR THREE ESTIMATES.

A merchant in Southern New Jersey tells his method of buying so as to secure the right prices:

The best and cheapest way in my judgment is when your stock runs down or you are figuring on a job, make out a list of goods and send it to two or three jobbers for estimates. It only costs you a 2-cent stamp, and you will always get very good figures on goods. Pay particular attention to your collections and discount your bills, and the jobbers will hunt you up and give you all the advantages in the market. *Cash talks!*

* * *

LOOK AROUND TO KEEP LOW PRICES.

Fear of having a jobber raise his prices keeps a New Jersey dealer inquiring of others:

I find it always pays to look around, otherwise houses with whom I have been dealing for a long time, and who think they have my trade any way, will not always give the best prices.

* * *

COMPARE JOBBERS BY TRIALS.

The practice of a Georgia dealer of comparing different jobbing houses by three months' trials is interesting:

The best way I have found in buying supplies is to buy for cash and pay cash. Then pick out two of the best jobbing houses and buy about the same goods of each for three months. Ask them both to give you their lowest cash prices. At the end of three months, compare prices and freights and you will soon find out the cheapest place to buy. I find it is no use to buy of a house that offers leaders at cost and then gets even with you on the balance of your order.

* * *

GIVES CAREFUL ATTENTION TO BUYING.

A New Hampshire merchant reads *The Metal Worker* Trade Report every week and keeps posted on prices, buying carefully:

Referring to article by "Enterprise," referring to careful buying for plumbers and metal workers, I will say I have been engaged in the plumbing and heating business for the past 20 years, and I have always made it a rule to pay careful attention to buying my goods. I believe that "goods well bought are half sold." I read carefully every week the market reports in *The Metal Worker*, which I find a great help to me. The jobbers find that I am posted as regards prices and that I discount my bills and they are anxious to sell me, giving me the lowest market prices. I purchase from one jobbing house handling that particular line, which makes my trade valuable to them. When I have a large job I often send my specifications for the material to different jobbers and let them give me prices on it. I know I save a great many dollars by doing this, and I think it will pay "Enterprise" to give more of his time and attention to this department of his business.

The Armour Institute, Chicago, is arranging for the erection of Machinery Hall, the first of the new buildings to be erected with funds provided by the Armour family in the recent gift of $1,000,000 to this institution. Machinery Hall will be four stories in hight, and will be used for technical instruction in machine shop and foundry work. The first floor will be used as a forge shop, the second floor as a machine shop, the third floor as a pattern shop, and the fourth floor as a foundry. The foundry will be lighted with a saw toothed roof, rendering every part of the room available for the most detailed work. This building will be fully equipped with the most modern facilities for thoroughly instructing the students in all details of the branches taught here. The entire building will be fire proof, mill construction being used exclusively.

Datus F. Brown of Cleveland, Ohio, who is with the Standard Lighting Company, sends us "An Office Man's Vacation in the American Kootenai Gold Fields," which is an account of a trip he made last summer into this mining region of Montana. Mr. Brown gives a lot of information about the mines, and he tells his story in such an entertaining way that the reader cannot help becoming interested in the country and its mineral wealth. The text is relieved by many half-tone illustrations.

An exhibition of minerals and products of mineral industries, of mining, machinery and processes will be opened December 2 and continued for 15 days at the Grand Central Palace, New York City. A historical and entertaining feature of the exposition will be an extensive reproduction of a frontier mining camp.

THE CANADIAN STOVE AND HEATING TRADE.

There are in the Dominion probably between 40 and 50 firms eugaged in mauufacturing stoves and heaters, says *Canadian Hardware*. The stove industry, as most of our readers are doubtless aware, is oue of the oldest in the history of the country. We have this from a report made away back in 1752 by M. Franquet, who was sent from France to inspect the iron works at the St. Maurice Forges. "Each stove," he said, in describing the process of manufacture, "is manufactured in six pieces, which are separately molded and are afterward fitted into each other and form a stove about 3 feet high." The forges at that timc were owned by the King of France. Over 90 years ago quite an export trade was done in stoves of Canadian manufacture, for we are told by a gentleman who wrote iu 1809 that the mauufacture of iron in Canada at that time was the most important of the country's industries, and that there existed a "considerable export of east irou articles, particularly of stoves."

Canada's export trade in stoves is now iusignificant, the quantity sent out of the couutry in 1900 being valued at less than $3500. Our trade in stoves, therefore, is confined to the home market, which our mauufacturers monopolize. Our import trade iu stoves is practically confined to the gas description, which are brought largely from the United States, $129,114 worth out of a total of $129,864 coming from that country. Our exports of stoves during the last three years and the countries to which they were sent were as follows:

	1898.	1899.	1900.
Great Britain	$520	$608	$74
Australia	....	61	143
British Africa	29	....	....
Cuba	....	....	55
British West Indies	168	183	333
Newfoundland	2,628	1,799	1,019
China	....	135	....
France	....	....	218
Italy	....	8	....
Hawaii	4	....	....
St. Pierre	553	1,035	857
United States	367	346	693
Totals	$4,287	$4,175	$3,392

It will be noticed that our best eustomers are Newfoundland and St. Pierre. There are four factories in Canada that make radiators, and some of them are most extensive affairs. Quite an important export trade is done in radiators, but unfortuuately the official trade returns do not reveal its extent. But the countries to which we export theiu are Great Britain, Germany, France, Norway, Sweden, Austria, Belgium, South Africa, China, Japan, Australia aud New Zealand.

In quality and pattern Canadian stoves, furuaces and radiators staud high. Iu these respects they are surpassed by no other country. The Canadian customs duty is 25 per cent., and although the home market is controlled by the home manufacturers prices here are slightly lower than in the United States, possibly about 5 per cent.

An exceptionally good trade has been experienced by the stove and heating firms of Canada during the last two years. Frequently the demand exceeded the supply. For the ensuing season's trade a large uumber of orders have been booked. An unsatisfactory feature of the trade is the threatened scarcity of steel, and particularly of polished steel plates used in the manufacture of steel ranges, air tight heaters, &c. These plates are imported from the United States, and although the stove manufacturers placed their orders early iu the spring they have not, owing to the activity of the market and the present labor troubles, been able to get proper delivery. Most of the manufacturers are thought to have a sufficient supply of steel plates to keep them going during the early part of the campaign, but, judging from the present conditions, the outlook is anything but promising for the latter part of it. In the meantime they can only pray that the strike may soon terminate.

William Miller, inventor of the Miller system of ventilation in connection with Hot Air Furnaces used by the Thatcher Furnace Company, 240 Water street, New York, is enjoying a vacation in the Adirondacks in company with C. B. Raymond, another representative of the house.

The Charm Crawford Range.

A novelty in range construction is being offered by the Walker & Pratt Mfg. Company, Boston, Mass., in their new Charm Crawford range. In this range, which is shown in the accompauyiug illustration, the makers have departed from the usual custom of fastening by bolts the uickeled edge bands, and have substituted cast iron guard rails, which are detachable and may be removed from the stove by simply lifting them off when it is desired to black the range or clean the nickel work. The additional point is made by the manufacturers that these nickeled rails, or bauds, are set at a little distance away from the castings of the range, so that there is a circulation of air behind them, tending to keep the uickeled rails cool. In this connection the manufacturers use the term "guard rails" to properly describe their new style of uickeled bands.

The Charm Crawford Range.

The mauufacturers supply circulars of this range, which it is also stated is of medium grade as to size and weight. We also uote that the company are still calling attention to their exceptional manufacturing facilities. Their fouudry is probably unequaled of its kind.

Gilt Edge Furnaces Require a Larger Factory.

R. J. Schwab & Sons Company, Milwaukee, Wis., manufacturers of the well-known Gilt Edge line of warm air furnaces and combination warm air and hot water heaters, have reeently purchased a strip of land 88 x 150 feet. This plot lay between their present factory and a 44 x 150 foot vacant lot they have owned for some time, aud the new purchase gives them a continuous strip of laud of 364 feet frontage on Clintou street by 150 feet deep, and also the property on Reed street, 96 x 150 feet deep, which is directly back of the Clinton street property, making the entire plant one piece of property. They are at the present time engaged in putting up a temporary addition to their factory to keep pace with their increased volume of business. They are also improving their equipment by installing electric traveling cranes for the molding room, more modern wood working machinery for the pattern department, and dies, presses, &c., for the purpose of manufacturing safety pipes and tin and galvanized iron furnace fittings by machinery. The company expect in another year to put up a building that will cover the entire Clinton street property, constructed of brick, steel and glass, which will represent a total expenditure of $75,000 to $100,000.

The Monogram Gas Stove.

The H. Adler Company, Pittsburgh, Pa., show several new gas stoves in their latest catalogue, one of which is the Monogram, of which an illustration is presented herewith. This is a closed stove for natural gas fuel

The Monogram Gas Stove.

and has a 3-inch flue connection. The stove is made in two sizes of blue steel, ornamented by embossing and by the cast illuminating front. The feet and trimmings are nickel plated. The top ornament lifts off, allowing for the convenient heating of food or water. The stoves are provided with powerful and durable burners, and in operation they are guaranteed not to sweat. They are light, so as to be easily carried.

The Irving Ranges.

Floyd, Wells & Co., Royersford, Pa., are distributing a little pamphlet intended more particularly for the perusal of those who are thinking of buying a range. There are many things to be considered in selecting this part of the household equipment, and some of the more important are pointed out by the writer of this pamphlet, who gradually leads up to the merits of the Irving line of ranges, made by the company in question. Special attention is directed to the corrugated oven plates now used in the entire line of these goods, and to the reverberatory oven, first introduced in 1892. The claim is made that a gain of about 20 per cent. in radiating surface is secured by means of the construction employed, and that the baking qualities are greatly improved thereby. The Irving line embraces the Bright Irving, the Rock Irving, the True Irving, the Lady Irving, &c., all of which "are built like a machine, well mounted and fitted."

Ordering Stove and Range Repairs.

M. Brucker, manufacturer and jobber of stove and range repairs, 325 to 331 North Lincoln street, Chicago, is furnishing his customers with a very convenient order book for their use in ordering repairs. This book contains a large number of blanks, which are ruled in columns with the kind of information necessary printed at the head of each column to enable the order to be filled with accuracy. If a customer looks at the heading in each column and places under it the precise information desired, he will be sure to receive just what he needs. The leaves are perforated so that they can easily be torn out. Carbon paper is intended to be used in writing an order so that a copy of it can be retained.

Mr. Brucker is a specialist in his line of business. He has been connected with this line for years, manufactures his own castings, and claims to carry the largest stock of any house in the West, hence is in a position to guarantee good castings at reasonable prices and to make prompt shipments. The success which he has attained in this line illustrates the old doctrine that men who devote their entire time to one thing will be able to understand it thoroughly and give better results than when many things are attempted.

Ornamental Andirons.

Some very handsome designs of andirons which are made of cast iron in imitation of wrought are being introduced to the trade by the Pittsburgh Stove & Range Company of Pittsburgh, Pa., one style being illustrated herewith. This design is known as No. 106, the andirons standing 20½ inches in hight. They are made in five styles of finish, including antique bronze, antique brass, Berlin black, Japanese bronze and bright brass. These andirons are a copy of the wrought iron work of the olden times, when designs of this kind were fashioned "by the hands of brawny men to the music of the anvil." The marks of the hammer could always be seen, as it was not then the custom to smooth out rough places. The company state that the goods which they are turning out are so clever in imitation that even the marks of the hammer can be found upon them. A four-

Ornamental Andirons.

page folder which is being sent out among the trade shows four designs of these andirons, all executed in clever imitation of wrought iron.

ODD PLATES.

Alfred Hughes of the Southard-Robertson Company, New York, has returned to the Stove and Range trade after a sojourn in the Adirondacks, and now G. W. Butcher of the same house is enjoying an outing with his family on the New Jersey coast.

The Independent Register Company, 154 to 158 Champlain street, Cleveland, Ohio, are sending through the mails an illustrated card in the interests of their Independent Registers. The company state that they now make 75 sizes of Registers, adapted to every possible use and requirement, and that they are prepared to ship promptly in response to orders for these goods.

The Walker & Pratt Mfg. Company of 31-35 Union street, Boston, Mass., are distributing a leaflet calling attention to their new parlor stove known as the Clover. It has planished iron body, draw center grate, which is easily removed; capacious ash pan, revertible back pipe with damper, heavy rails placed well above the base and linings which are carried up one course above the level of the door. The Stove is made in four sizes, the

number indicating the diameter of the body. A second leaflet gives an interior view in the company's molding shop, showing about half their capacity. They state that after careful experiment they have made and placed in stock an assortment of aluminum water fronts for all their leading styles of Cranford Ranges, these being made in one piece, of the same thickness as the regular cast iron water fronts, and carefully tested at 150 pounds to the square inch.

T. Waddington, Philadelphia, Pa., who has been established in the Stove business at Passayunk avenue and Christian street for the past 29 years, has retired from active business. Mr. Waddington has been succeeded by his nephew, E. R. Glazier, Jr., who has been associated with him for a number of years, and who will continue the business at the same location.

The Excelsior Steel Furnace Company, Chicago, are among the fortunate manufacturers of Furnace Pipe and Fittings who laid in a sufficient stock of tin plate to enable them to satisfactorily meet the requirements of their trade this season.

The South Superior Stove Works, Superior, Wis., have been sold to the Duplex Mfg. Company, and will be used by the new owners as an addition to their Wind Mill plant. The Stove works had not been operated for several years and may now be considered as having passed out of consideration as a possibility in the Stove trade.

Ground has just been broken for the addition which is to be erected by the Prizer-Painter Stove & Range Company at Reading, Pa., the contract for the work having been awarded to Elmer D. Dampman. The addition will cover an area 35 x 150 feet, and when the improvements are completed employment will be given to some 50 additional men.

"A Book About the Eclipse" is the title of what is known as supplement A to catalogue No. 18, issued by the Eclipse Stove Company of Mansfield, Ohio. In it reference is made to new goods, which include the Triumph Eclipse Steel Range, D series; the Astral Eclipse cook, made for coal and also for burning wood; the Lustrous Eclipse, a new hard coal base burner; the Wonder Eclipse, a wood air tight heater; the Herald Eclipse and the Sun Eclipse.

William Resor & Co. of Cincinnati, Ohio, are the subject of a very complimentary article which appears in a recent issue of the Cincinnati *Merchant and Manufacturer*. Their plant is described at considerable length and extended reference is made to some of their leading lines of goods. Among these may be mentioned the Champion Monitor Steel Range for coal, the Monitor Gas Ranges, the Monitor Base Burner, the Monitor Oak and the Monitor Hot Blast. The article concludes with a list of the officials of the company.

The plant of the Moon Stove & Range Company at Columbus, Ohio, was destroyed by fire on Saturday, August 17, the loss being partially covered by insurance. We understand that the works will be rebuilt at once.

The Kelsey Furnace Company of Syracuse, N. Y., in a circular letter to the trade point out that one of the very desirable features of the Kelsey Warm Air Generator is that it sends the heat where it is wanted, and in this way every part of a building can be properly heated on the coldest day. It is claimed that the Kelsey will heat large residences, schools, churches and libraries, houses in exposed situations, rooms located at a long distance from the generator, even heat basement rooms on a level with the heating apparatus. Accompanying the circular letter is a booklet which throws considerable light on the quality of the air furnished in connection with the Kelsey Warm Air Generator.

An announcement has just been issued by the Walker & Pratt Mfg. Company of Boston, Mass., to the effect that beginning September 1 they will ship all their leading Ranges fitted with Dockash Grates, unless requested to send Triple or Plain Grates. This, it is stated, applies to the Home, Empire, Charm and new style Prince. The company state that their improved Dockash Grate is different from all others in that the two bars are of the same pattern, which is a great convenience both to the dealer and to the user. Either bar can be easily replaced without removing the grate support, linings, water front or coil. The anouncement is printed upon a leaflet carrying a half-tone illustration of the company's pattern buildings, which are referred to as being "busy places."

The Monarch Stove & Mfg. Company, Mansfield, Ohio, are sending through the mail a card carrying an illustration of the Monarch Ventilator and Gas Heater for the season of 1901. The company state that their new catalogue is ready for distribution and they will be glad to send a copy to any dealer on application.

The S. M. Howes Company, 40 to 46 Union street, Boston, Mass., have issued under date of August 15 a catalogue and price-list of Heating, Confectioners' and Laundry Stoves, designed for burning wood and coal, also of Portable Galvanized Ovens and Farmers' Boilers. The publication is neatly bound in red paper covers and is arranged with a cord for hanging it within convenient reach. The Heaters include a varied assortment of Oaks, Surface Burners, Sheet Iron Cylinder, Globe, Cannon, Cottage Parlor, Laundry and Air Tight Stoves. Miscellaneous goods are considered, including the New Process Oil Heater, the Electric Oil Heater, the Rochester Radiator, the Model Stove Truck, Stove Boards, &c.

The Best Vapor Lamps.

"The Best Light" is the title of a pamphlet distributed by the Best Street Light Company, Canton, Ohio. The motto of the concern is, "Maximum light at minimum cost." The Best incandescent vapor lamp is fully described in the introductory pages of the pamphlet, and the merits are pointed out, which include ease of management, cheapness and high illumination. Another important advantage that will be particularly appreciated during the warm weather is the claim for these lamps that they give off less heat than other illuminants. The first 20 pages show various forms of hanging and wall lamps of many different types, the reservoir being above the lamp and connected to it by a bent tube. Then come lawn and veranda lamps and the different styles of street lamps, beside torches of various kinds. The closing pages are given up to different patterns of shades.

Hardware Store Business Methods.*

A new and enlarged edition of "Hardware Store Business Methods" has just been received from the press. The book contains 227 pages, substantially bound in cloth. It retains all of the features which made the former edition so popular, and has in addition a very interesting and instructive chapter on "Keeping Track of Shop Work."

The scope of the work is broad, treating, among other subjects, those of buying and selling, stock taking, care of price-lists and catalogues, treatment of clerks, collections, methods of changing credit into cash business, record of stock, cost marks, &c.

The additional pages on keeping track of shop work are of importance, describing, as they do, jobs of repairing bicycles and plumbing and tin work jobs, from the taking of the orders to the completion of the work. Illustrations are given of the various slips and cards used in approved systems, the orders being followed from the time they are recorded until a permanent record is filed for future reference.

All of the methods described in the book are practical ones and in use by enterprising business men.

C. F. Myers, Westport, Ind., has disposed of his Hardware, Stove, Tinware, Agricultural Implement and Sporting Goods stock to Tripp Bros., who have moved the goods to their own building. They also conduct a store at North Vernon.

*David Williams Company, 232-238 William Street, New York. $1.00, prepaid.

THE RETAILER; HIS RIGHTS AND HIS POWER.

BY THE PRESIDENT OF THE NATIONAL RETAIL HARDWARE DEALERS ASSOCIATION.

Man was born with lungs. This fact establishes his natural right to breathe. He was also born with intellect and hands. This fact establishes his natural right to labor with mind and muscle. So nature, which is neither illogical nor incomplete, also supplies air for the lungs and material for mental and physical labor. Man's right, therefore, to live, to labor and to elect what disposition shall be made of the products of his labor are natural rights, they are indefeasible and inalienable, and any system of human relations which declines to acknowledge the verity of man's natural rights will surely fail.

Slavery was not wrong because the slave was cruelly treated, improperly housed, fed or cared for. This affirmation in many cases was untrue. But slavery was wrong because man's natural rights were violated.

TRADE RIGHTS IN THE COMMERCIAL WORLD.

There are in the commercial world certain "trade rights" which may very properly be likened to man's natural rights in that the demand from organized society which creates the retail Hardwareman also creates his field of operation. The modern method of Hardware distribution is rational and sound. First, the manufacturer; second, the jobber; third, the retailer. These three, in the order named, are the trinity of commerce and their respective spheres are well defined. The manufacturer supplies the jobber, the jobber supplies the retailer, the retailer the consumer. That this is the natural relation is thoroughly understood by manufacturer, jobber and retailer, and that this natural right of the retailer is violated both by the manufacturer and jobber is evidenced by facts indisputable. Out of this condition grows the contention of the retail dealers with the manufacturer and jobber who trample on their natural rights, and out of this condition will grow an "irrepressible conflict."

PERMANENCY OF JOBBER AND RETAILER.

It is idle to talk about the passing of the retailer. It is equally absurd to anticipate the decline of the jobber. Both are indispensable members of the commercial entity, and for mutually profitable existence there should be harmonious relations. But the manufacturer and jobber in their zeal for business overstep the boundary of their respective spheres and, without apology or ado, break the first commandment of the commercial decalogue, "Thou shalt not covet retail trade."

TRESPASSING ON RETAIL TERRITORY.

This tendency to trespass on retail territory is manifest in many lines, but the distribution of Builders' Hardware is a splendid example of the frequent violation of the retailer's natural rights. Jobbers and manufacturers sell direct and over the heads of their own customers to architects, contractors and owners. These are consumers and therefore belong in retail territory. It is insufficient to suggest that frequently their wants are large and therefore the manufacturer and jobber should sell to them. Such fact cannot change their classification as consumers. A jobber recently received a request from a number of his customers asking that he abandon his practice of selling Builders' Hardware to the consumer. His reply stated that some of the orders were large, and the inference was therefore that he should sell them. And he also inquired what they would promise him in return should he quit the retail field.

A SUPPOSITITIOUS CASE.

The attitude of this jobber toward his clients is very similar to that of a vender of fruit trees who sold his customer an assortment of trees. The customer held valid title to a piece of ground on which he planted the trees. He dug, pruned, mulched and sprayed. The vender came again that way, but the crop was scarce and small; so he paid little attention to the fruit and offered more trees. His customer bought them at the vender's price, paid the cash, set out the trees and cultivated assiduously. The trees grew large and hung heavy with fruit, ruddy and tempting. The vender passed again. He saw the fruit, stepped over the boundary lines and began to pluck and gather and put into sacks. The owner (his customer) came and said, "What right have you to come into my field and take the product of my labor?" The vender said, "What will you promise me in return if I quit your field?" Such expressions as these from representative and intelligent jobbers indicate outrageous rapacity and greed on one hand and jeering insolence on the other.

THE POWER OF THE RETAILERS.

The retailers of this country are ignorant of their power. A recent investigation showed that in a certain State the capitalization of the members of the retail Hardware association exceeded that of the jobbers in that State, and the membership did not equal 50 per cent. of the State's retailers. More than this, the retailer is the one who comes in personal contact with the consumer. His encouragement or disparagement has great weight in the placing of his merchandise with consumers.

DISPLACING AN ARTICLE OF STANDARD QUALITY.

In the personal experience of the writer an article long recognized as the standard of excellence was and is practically cleared from the shelves and in its place is sold the product of a competitive concern, and this is done easily. Our profits are materially increased, nor is the interest of the consumer in any sense violated. His purchase is of a quality which equals any similar article produced. The change was made because the original concern was contemptuous of a retailer's request. The second concern, whose goods we now handle, was not.

AN APPEAL TO RETAILERS TO JOIN THE NATIONAL ASSOCIATION.

The attitude of those concerns who hold the retailer in contempt will soon be known to the members of the National Association. Every Hardwareman anywhere in the United States should belong, first, to his State organization and then insist on its affiliation with the National Association. There is absolutely no other plan, argue as you may. This is the move. The community of interest idea, developed by the long heads of railway and other interests, is bringing success. It has a ready application to retail Hardware dealers. The national organization gives them the one opportunity to be felt in the war on those who violate the sanctity of retail territory.

THE REASONS FOR JOINING.

1. The membership fee of $1 is nominal. Any man who is sincere will not hesitate because of the fee.

2. Loyalty to the principles expressed in the constitution is of more value than a hundred fees.

3. Persistency counts. We should enlist for a period equal to that of our sojourn in the Hardware business.

4. We are, and in all conscience should be, self supporting. We ask no money contribution and will accept no financial aid from any manufacturer or jobber in the land. We are men with capital invested. Millions in the aggregate. We will give fair treatment and will demand fair treatment.

The Arkansas Association by unanimous vote joined the National Association June 20. Every Hardware Association in the country not already affiliated should do the same thing at its next executive meeting or next annual convention. This is vital to its interest as well as the interest of the national organization. The volume of Hardware to be distributed is increasing. Our profits in the business and our share in the distribution depend on its being placed through the proper channels. Every Hardwareman should act promptly and should act continuously until "piracy exists no more, and fairness reigns on fields of peace."

COMPANIA PAN-AMERICANA DE NOVEDADES (Pan-American Novelty Company), 606 Montgomery street, San Francisco, Cal., who make a specialty of export mail orders to Mexico, Central and South America and the Philippines, advise us that they would be glad to receive catalogues and other printed matter from manufacturers of Hardware Novelties suitable for export mail orders.

EVERY DAY DIMENSIONS FOR PLUMBERS.

BY O. N. E.

Experienced workmen often have recourse to methods, outside of generally accepted practice, which are found useful and effective, and, therefore, are worth while recording. In many little details of work variations are made that are not sufficient to upset the standard, yet which demonstrate the license that a competent hand may take without wasting time or material or interfering with the quality of his work. Among these details are the dimensions of wiping cloths and those of the joint to be wiped. There may be those who do not observe the dimensions given below, but who will be willing to concede that they can be used with advantage until a workman finds what changes may be necessary for comfort and convenience.

WIPING CLOTHS.

Many plumbers do not risk their wiping cloths in the tool bag, but are apt to carry the favorites particularly, if not the whole set, in the hip pocket. Although wiping cloths can now be bought at most of the supply houses, there are many workmen who still make their cloths of whatever material best suits their purpose, moleskin, bed ticking of good quality and other smooth finished cloths being used. The size varies according to the work to be done, but usually follows these dimensions:

Size of Wiping Cloths.

	Size of pipe. Inches.	Size of material. Inches.	Size of finished cloth. Inches.
Round joints	⅝ to 2	12 x 12	3 x 3
Round joints	4	16 x 16	4 x 4
Branch joints	⅝ to 2	10½ x 10½	2½ x 2½
Flange joints	....	13 x 7	3¼ x 1¾

The cloth is folded with the two outside edges to the center, and then folded again, giving a long, narrow strip. Then the ends are folded to the center, and again folded, leaving no raw edges. The ends are now secured by sewing with secret stitches in one place on each side. This leaves the cloth pliable and ready to have any loose nap burned off against a hot solder pot. Finally they are rubbed with chalk to fill the pores and greased for use. Other sizes of cloths are doubtless used to suit the work or the convenience of the workman.

SPACE TO BE CLEANED ON JOINT.

The space on the material to be shaved clean to wipe a joint is in many instances not measured, but is not far from what is given below:

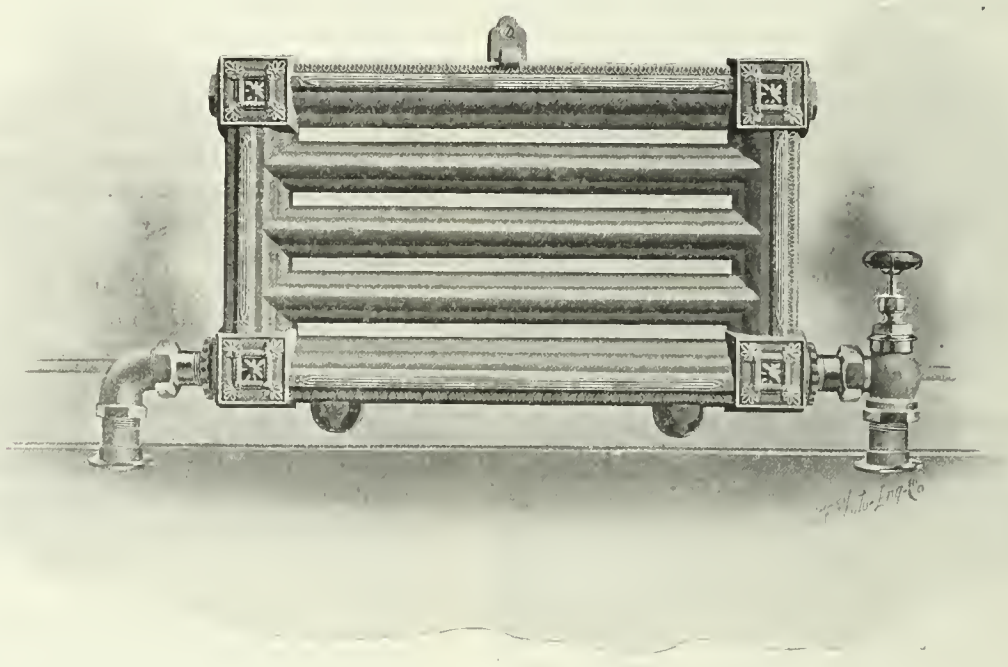
Length of Joints.

	Size of pipe. Inches.	Clean space. Inches.
Round joints	⅝ to 2	2
Round joints	4	1¾
Branch joints	....	1 x 1¼
Flange joints	....	¾ x ¾
Tank seams	....	⅞ x ⅞

In cleaning space for branch joints, the longer space is cleaned along the pipe each side of the branch opening and the shorter space on the branch. On each side of the cleaned space the material is soiled, covered with paper or pasted, to suit the workman. In order to have their work look uniform, some men have oval forms of stiff paper, leather or other flexible material, which they lay on the pipe to mark out the space to be cleaned for making branch joints, but more use the dividers to mark the space, having one leg of the dividers on the inner edge of the branch opening and using the other to do the marking.

The Imperial Wall Radiator.

The Imperial wall radiator, of which an illustration is presented herewith, is a recent addition to the line



The Imperial Wall Radiator.

of the Fowler Radiator & Mfg. Company, Johnstown, Pa. The manufacturers of the Imperial say they were induced to get up a new equipment for a wall radiator owing to the frequent complaints of the trade that the wall radiators in general use were inclined to leak at the joints when a considerable number of sections were assembled together; also that the internal right and left nipples were too small to insure perfect circulation, except on small radiators. The leaky joints were largely due to the bosses being too light to withstand the strain to which they were subjected on large radiators. This has been overcome by making the bosses on the Imperial extra heavy, and using much larger nipples for assembling the sections.

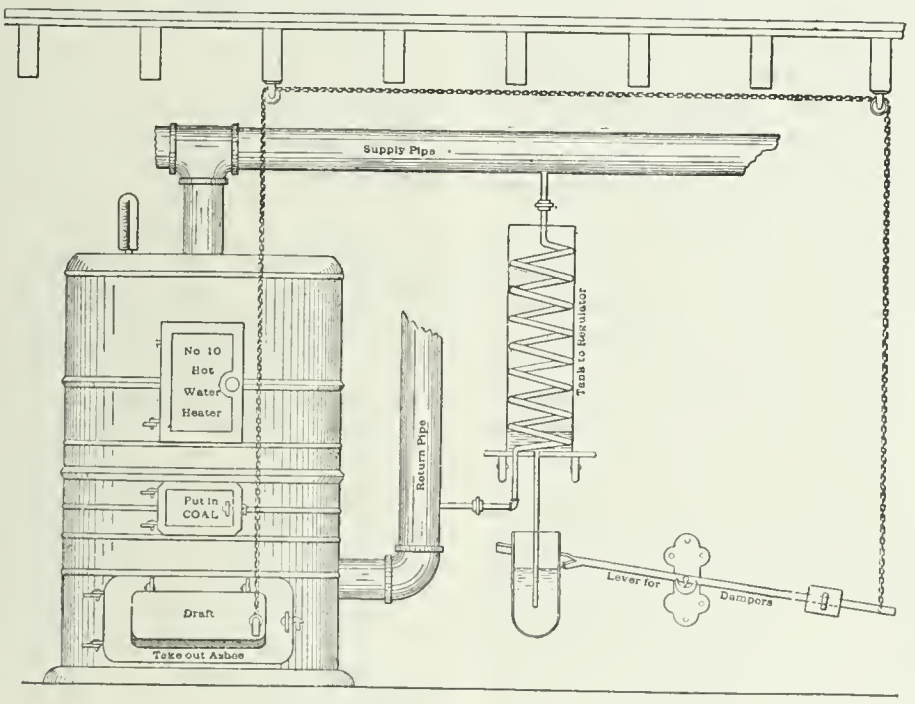
These improvements, in connection with the special machinery for boring and facing, secure a joint that the manufacturers guarantee to be absolutely tight under all conditions. The sections are all tested to over 100 pounds pressure before leaving the factory. This, along with the highly artistic design and liberal ratings, has made the Imperial a favorite with the heating trade wherever it has been used.

REED MFG. COMPANY, Erie, Pa., have issued an illustrated catalogue D, of Malleable Iron Pipe Stocks, Dies, Machinists' Sectional and Combination Vises, Taps and Reamers, Pipe Cutters, Emery Wheel Dressers, Tap and Pipe Wrenches, Beam Clamps, Pipe Hangers, Oil Cups, &c.

The Morgan Damper Regulator.

Morgan & Co., 40 Dearborn street, Chicago, have brought out a damper regulator to meet the demand for a device of this character which can be relied upon to regulate the dampers of hot water and vacuum steam heating apparatus and which can be sold at a moderate price. It is the invention of D. F. Morgan, senior member of the firm. The damper and its application to a heater are herewith illustrated. Its leading features are simplicity in construction and accuracy combined with a low selling price.

This damper consists of an air tight tank, having throughout its entire length a copper coil, the ends of which extend through and are fastened to the top and bottom of the tank. These ends are for the purpose of connecting to the main and return pipes of the steam or hot water plant, as the case may be. From the bottom of the tank a brass tube extends down for the purpose of delivering the contents of the tank into the receptacle provided to receive them. The receptacle is a metal vase. This vase is fastened to one end of an iron rod, which has a fulcrum at a proper distance which sets in a bracket, the other end of the rod having an adjustable



The Morgan Damper Regulator.

weight which may be moved and fastened at any desirable point on the rod. At the extreme end of the rod is fixed a chain which extends over pulleys and fastened to the dampers, which open or close as the end of the rod is raised or lowered. The motive power of the regulator is the expansion and contraction of the air in the tank as it is heated or cooled.

In the operation of this damper the weight is moved on the rod until the desired temperature is reached. The vase is then filled with water, which causes the end to which the chain is fastened to rise. This closes the damper. As the vapor or water in the heating plant cools down atmospheric pressure forces water from the receptacle into the tank until the weight on the rod overcomes the weight of the receptacle. It will then fall, which again opens the damper. This regulator will also be found of value in controlling the temperature of the hot water used for domestic purposes, as, after being set, it will constantly keep the water at a desired temperature. The regulator has no complicated parts to get out of order, and it requires no attention beyond moving the weight to suit the external temperature and occasionally putting a little water into the receptacle. It is easily attached to either an old or new apparatus.

J. Taylor Flynn of Middletown, Conn., has the contract for plumbing a new school house that is being erected at Cromwell, Conn.

Royal Steam and Hot Water Heaters.

We have received from the Hart & Crouse Company, Utica, N. Y., a copy of a neatly printed catalogue of 42 pages, relating to the Royal steam and hot water heaters, adapted for all classes of buildings. The statement is made that these goods were constructed to meet the demand for a sectional heater in portable form which would be safe, economical, powerful and durable and which could be taken into buildings already erected through the ordinary openings, such as doors and windows. The company also state that in their desire to maintain the high standing and reputation which their Royal heaters have attained during the past ten years they have continued to improve them from time to time, adding new sizes and such improvements as a practical demonstration of their merits seemed to warrant.

The Royal is shown in several varieties and accompanied by tables giving prices and capacities. An important feature of the catalogue is found in directions for using the Royal safety sectional steam heater and the Royal hot water heater, also instructions for setting them up. Several pages are devoted to the Royal circular sectional steam and hot water heaters, illustrations being accompanied by price-lists and capacities of the various sizes in which these goods are made.

The J. H. McLain Company's Heating Goods.

The Seneca radiator, for steam or hot water, is a new style that is being put on the market by the J. H. McLain Company, Canton, Ohio. Recent circulars issued by this firm show the Seneca two and three column radiators by means of half-tone illustrations which bring out the decorative features of these goods. They are made in a full line of sizes, and circulars give the dimensions and heating surfaces of the various sizes. The radiators are made for both one pipe and two pipe steam connections and are described as all nipple connections with no packing. A side view of the Seneca radiator is presented showing the air space between the sections.

We are also indebted to the J. H. McLain Company for a beautifully illustrated catalogue of 40 odd pages showing their line of hot water and steam heaters. In the introductory notice they refer to these pioneer heaters and remark upon their durability, efficiency and fuel economy. Each water part of their boilers is tested to 85 pounds water pressure. The ratings are based on a pressure of 2 pounds of steam at the boiler and 180 degrees for water. The catalogue is of large size, 12 x 9 inches, giving ample room for illustration of the boilers, internal construction of which is shown by broken

views, and being of such size that all the features are clearly brought forth. The half-tone engravings are both finely executed and printed, while the accompanying text, printed in green and red inks, tells all about the various constructions. The large boiler that begins the catalogue is the brickset Cornell, followed by the Princeton. Then come the Humber, the Oxford, the Cambridge, the Amherst and the Yale, in the order named, the water heaters being presented in the last pages.

A third publication that we have received from the company is an illustrated catalogue and price-list of steam and water goods, showing cast iron fittings, wrought iron pipe, iron and brass valves, cocks and supplies of all sorts.

"The Truth About Heating" is a dainty little pamphlet of 50 pages which the J. H. McLain Company send out in the interest of their boilers. Small illustrations are presented of the various types, and these are followed by views of the office and works of the company at Canton, and illustrations of many buildings heated by the McLain boilers. The accompanying text is a list of references covering cities from Maine to California.

THE SITUATION OF ENAMELED BATHTUBS.

This is a harvest season for the independent bathtub manufacturers. Never before in the history of the business has such a splendid opportunity been offered them to make and market their tubs. Those in the business of making enameled bathtubs know what difficulties confront them before the tub is turned out in a marketable state. It is conceded by all in the business that the tubs made by the leading interest are as near perfect as it is possible for these goods to be made. This is not true, however, of tubs made by all of the independent makers. But the enormous demand for tubs at the present time is helping the new comers by taking all their output, whether they be good, bad or indifferent. This, of course, is giving the new tub makers an opportunity to experiment with their plants at a small cost to themselves until they ultimately strike upon the right formula and process by which the first quality tubs are made.

It is generally remarked that some of the tubs now being sold to the trade are no better than iron castings painted. If it were not for the great scarcity now prevailing there would not be so many manufacturers in the business who have not yet got beyond the experimental stage of the business. It is doubtful whether very many of them will master the art before the demand abates.

The Perfect Boiler.

Within the covers of an eight-page pamphlet which is being sent out by the Pierce, Butler & Pierce Mfg. Company, with works and main office at Syracuse, N. Y., are to be found illustrations and description of the Perfect water boiler, which they manufacture. This boiler is intended for using hard coal only as a fuel, is square in shape, portable in form, and of "peculiar but efficient construction." The fire pot is tapering, being largest at the bottom, and is composed of two hollow sections deeply corrugated upon the sides that come into direct contact with the fire. These corrugations form channels up the inside of the fire pot for the passage of heated air and gases. This arrangement increases the direct fire surface, while at the same time it makes simple provision for expansion and contraction. Above the fire pot is placed the first water or distributing section, composed of a series of V-shaped channels for the passage of air, having V-shaped spaces between them for the passage of the products of combustion. These channels and spaces extend horizontally from the front to the rear of the sections and are arranged side by side over the entire surface of the fire. A second distributing section is placed over the first with a small space between them, the construction being somewhat similar to that of the first section. The complete boiler is built up in this manner, several sections one above another forming a number of circuitous flues for the passage of heat.

The manufacturers claim that owing to the peculiar construction of the sections and the small body of water contained in each one there is a positive and rapid circulation through every part of the boiler, which prevents the accumulation of sediment and makes a very powerful circulator. The sectional grates consist of triangular hollow bars which are operated through slides in the ash pit door. Each joint and section is secured in proper position by means of four steel bolts on the outside of the boiler drawn down to a uniform tension. In connection with the description of the boiler is a table giving the sizes in which it is made, the code words of the different sizes, together with dimensions and capacities.

Heating and Plumbing Notes.

A. S. Whitehead, Plumbing Inspector of Allegheny, Pa., has announced that the following master plumbers successfully passed the recent examination before the Examining Board: James P. Wall, W. J. Lenox, C. G. Barnett & Son, C. A. Wilhere, H. Schwarm, John P. O'Brien, Harvey Lewis and R. J. Steenson & Co. The Examining Board consists of Inspector Whitehead, Superintendent A. McLaughlin of the Allegheny Bureau of Health, and David Hastings. Under a new law this board is to be increased to four hereafter.

The contract for heating the Chestnut Street School, Waltham, Mass., has been awarded to Donnolly, Merritt & Co. of Boston, at their bid of $3137. The plumbing work was given to Fred. H. Kirwin of Waltham.

The Board of Health of Attleboro, Mass., are continuing their war against plumbers in that town who do work without a license, in contravention to the municipal ordinances. A warrant was issued last week against one such person. The members of the Board of Health declare that it is their purpose to see that the statutes are strictly complied with by every plumber in town, or else he will not be permitted to do business.

M. Carney of Philmont, N. Y., has just completed a hot water heating system in the residence of Hon. Abraham Vosburgh, at Ghent, N. Y. He has also secured the contract for installing a steam heating plant in the Berkshire Box & Paper Company's new mills, at Mellenville, N. Y., and is remodeling the heating system in the Union Free School, at Chatham, N. Y.

The Sanitary Coupling Company of Saugatuck, Conn., have received the contract to fit the large Windsor Hotel, at Trenton, N. J., with their patent Water Closets; also the new Y. M. C. A. Building, at New Haven, Conn.

Hopper & Sweeney of Hartford, Conn., have the contract for plumbing the Town Hall in Unionville, Conn.

The Foskett & Bishop Company, New Haven, Conn., are working on contracts for Steam Piping and Connections for the Palmer & Monson Street Railroad Company, the Norwich Gas & Electric Company and the Greenwich Gas & Electric Company.

Flynn & Miller, 217 Congress avenue, New Haven, Conn., who started in the plumbing business a few months ago, are reported to be busy with contract and jobbing work. The members of the firm, W. E. Flynn and O. W. Miller, are experienced and practical plumbers and well qualified for carrying on any work in these lines intrusted to them.

The showrooms of the Bradley & Hubbard Mfg. Company, Meriden, Conn., have recently been redecorated and rearranged so as to present the goods of the company in the most attractive manner. The company are large manufacturers of Gas and Electric Light Fixtures.

The National Pipe Bending Company, New Haven, Conn., manufacturers of National Feed Water Heaters and Coolers and Benders of Pipe, have awarded the contract for the construction of a two-story brick addition to their plant, 60 x 100 feet. The building is intended for an extension of the company's Brass and Copper Coiling department and will cost about $15,000.

H. Kelly & Co., Minneapolis, Minn., have been awarded the contract for the heating and plumbing work for the Chamber of Commerce in that city.

We are indebted to the Whitlock Coil Pipe Company of Hartford, Conn., for a little pamphlet illnstrating and describing the American Standard Feed Water Heaters. The pamphlet contains 16 pages and tells all abont the American Standard Heater, explaining its construction. Instrnctions and diagrams are also given showing how these Heaters are set in connection with componnd and componnd condensing engines. The American Standard Donble Coil Heater is likewise illnstrated and described. The same company are distribnting circulars referring to the American Steam and Oil Separator, for use in exhaust steam heating to remove the oil, thns keeping the heating snrfaces clean and in an efficient working condition.

One of the largest plumbing concerns in Eastern Connecticnt is the Mallory Company of 212 Bank street, New Haven. The company make a specialty of installing high class systems of steam and hot water heating, as well as Hot Air Fnrnaces. They also do everything in the line of plnmbing, sewering, draining and ventilating, and make a specialty of yacht plnmbing. The company have a large amonnt of work in hand and give employment to a big force of plumbers, steam fitters and sheet iron workers.

Bleyler & Marker of Chester, Pa., have been awarded the contract for installing the heating apparatus at the Langston School in that city at their bid of $1389.

Henry Weyand, Waterbnry, Conn., has a contract for plnmbing and tinning a new eight-tenement block on Hlll street, and one for roofing and plnmbing the addition to James V. Washburne's factory on Jefferson street, that city.

John L. Thomas, Ballston Spa., N. Y., secured the contract to place a Mahoney Boiler in the new Frank Bnilding in that town and do the necessary steam piping, plnmblng and roofing work on the same.

The American Mfg. Concern of Anckland, N. Z., are said to be purchasing some good sized lots of Plumbing Material in this country.

J. H. Alvord of Winsted, Conn., has the contract for plnmbing the Smith Block in that town.

Dispatches from Honolulu, H. I., report that the plumbers' strike, which has been ln progress for more than a year in that city, has been amicably adjusted. The plnmbers demanded $6 a day wages and a compromise was effected at $5.50 a day.

The Connty Commissioners at New Bedford, Mass., have awarded the contract for a new heating and ventilating system at the New Bedford Jail and House of Correction to the Cook & Grew Company of Fall River at their bid of $1920.

Robert Mowbray, manager for the Sedalia Steam Heating Company, Sedalia, Mo., has been instructed by the stockholders of the concern to pnrchase a suitable site and arrange for the immediate erection of a steam plant for the use of the company. The company have heretofore been dependent on the Sedalia Electric Railway Company, using the exhaust steam of that concern, bnt the increased demand for the steam heat supplied by the company has necessitated the establishment of their own plant. The company are preparing to extend their mains throughout the residence districts of the city, so that all may be provided with steam heat who desire it.

A deed was filed this week at Beaver, Pa., recording the transfer from the Colonial Land Company to J. W. Arrott of 8½ acres of property in Monaca, Pa., for the consideration of $12,750. The property will be used by the United States Sanitary Company, recently incorporated, as a site for the erection of a plant for the manufacture of Enameled Bathtubs and other sanitary goods.

It is reported from Pittsburgh that the Standard Sanitary Mfg. Company, at a recent meeting of the Board of Directors, adopted plans for the concentration of the manufacture of their various products at four points—viz., the works of the Standard Mfg. Company at Allegheny, Pa.; the Dawes & Myler Works at New Brighton, Pa.; the Ahrens & Ott Works at Louisville, Ky., and the plant at Rome, N. Y. It is stated that the Standard works in Allegheny will be enlarged so as to make it the most extensive plant of its kind in the world. When the improvements are completed employment will be given there to an additional force of 400 to 500 men. It is probable that an office building will be erected in Pittsburgh for the company, as additional office space is found to be greatly needed.

Peck Brothers Company of Chicago will discontinue carrying stock in Milwaukee, Wis., on September 1, and cover their Milwankee bnsiness from the Chicago office.

The Central Foundry Company, 116 Nassan street, New York City, have closed down their Lansdale, Pa., plant until the stock on hand shall have been disposed of. The company snpply Philadelphia and vicinity only from this plant, as they find it more convenient and cheaper to snpply other territories from their other plants. This plant is one of the best equipped owned by the company, and they have no intention of abandoning it, as reported, bnt on the contrary will pnt it again in operation as soon as business in that vicinity will admit.

Weatherly & Pulte, Grand Rapids, Mich., have the contract for installing the plnmbing and heating and doing the roofing work on the new Ferris Industrial School building at Big Rapids, Mich.

Work on the new plant of the American Sanitary Snpply Company at Elizabeth, N. J., is being rapidly pnshed forward. A nnmber of substantial brick buildings are in course of erection and it is expected to have them all inclosed before winter, after which the installation of machinery will be made. It is expected that the plant will be ready for operation next spring. The company's property covers about 6 acres of ground on the shore front and extending to the B. & O. Railroad tracks.

The American Radiator Company, Chicago, now have in press and in a few days will distribute to their customers two catalogues, which, it is said, will be among the finest trade catalognes ever issued. One of these catalognes will treat of the Radiators mannfactured by the company, while the other will show their Ideal line of House Heating Boilers.

Sealed proposals will be received by Quartermaster D. E. McCarthy, at Fort Leavenworth, Kansas, until September 9, for plnmbing and steam heating a cavalry barrack building at that post.

Fred. B. Carroll, Rumford Falls, Maine, has been awarded a contract to furnish a Steam Heating Apparatus for the Chisholm School House in that town. The buildings will be heated by direct and indirect radiation, a Richmond Boiler being used.

William Mercer of Grand Rapids, Mich., has the contract for installing a heating and plumbing system in the Conrt House at Ithaca, Mich. The contract amounts to abont $2800.

At the convention of the United Association of Journeymen Plumbers, Gas Fitters and Steam Fitters, which closed in Buffalo, N. Y., the following officers were elected: President, William Merrick, Salem, Mass.; secretary-treasurer, L. W. Belden, Cleveland; organizer, W. J. Spencer, Buffalo; auxiliary secretary, Thomas E. Burke, Chicago; first vice-president, J. McKee, Pittsburgh; second vice-president, W. E. Martin, Minneapolis; third vice-president, Joseph Buggy, Missonrl; fourth vice-president, M. J. McCarthy, Washington, D. C.; fifth vice-president, W. C. Brickey, Kansas City; sixth vice-president, C. F. Kiefer, Worcester, Mass.; seventh vice-president, R. Wilson, Toronto; eighth vice-president, R. M. Simpson, Seattle; ninth vice-president, A. M. Thatcher, Fort Worth, Texas; tenth vice-president, J. Little, Youngstown, Ohio; delegates to American Federation of Labor, Frank Benson, Cleveland, and John Clark, Buffalo.

The new club house of the New York Yacht Club in New York City will be heated exclusively with Radiators manufactured by the American Radiator Company of Chicago. The heating contractors are Baker, Smith & Co. of New York. This club is one of the finest clubs in the country, but perhaps its best claim to a world

wide reputation is its possession of the America cup, which has been the subject of so many contests between yachtsmen of this country and Great Britain for half a century. The continuous possession of this cup by American yachtsmen for so many years is a unique event in the world of sport. Our English friends will make another effort to win it this fall.

P. Gormley, Philadelphia, Pa., has taken out city permits to install a hot water heating plant at a cost of $1500 in the Sisters' House of St. Bonifacius Roman Catholic Church, and a steam heating Boiler to cost $700 in the parochial residence of the same church.

The Hull Bros. Company, Danbury, Conn., are experiencing a season of great activity in their plumbing and heating department, and have secured some of the largest contracts, both local and in adjoining towns, ever yet handled by this house. Among other large contracts recently taken is an extensive heating and plumbing equipment for Arnold Turner of Danbury, also one in Carmel and another in Wilton, Conn.

New Firms and Changes.

Voelkers & Wahlen is the title of a new plumbing and heating firm who have just opened up in business at South Bend, Ind.

The Charles F. Oxley Mfg. Company of Cranford, N. J., have recently been incorporated, with a capital stock of $25,000, to manufacture Gas and other Fixtures, the incorporators being Charles F. Oxley, Sarah E. Rea, Alfred N. Rea and Charles E. Oxley.

The North American Carbide Company, with principal office at 224 Market street, Newark, N. J., have been incorporated, with a capital of $100,000, to manufacture Carbide. William H. Wells, Joseph F. Wiswall and Charles E. Wiswall are the incorporators.

The Logan Burner Company of 221 Market street, Camden, N. J., with a capital of $100,000, have been incorporated by T. Logan, P. W. Janeway and John O. Wilson to manufacture Gas Burners.

Joseph Fletcher and J. H. Peck have opened a plumbing and tinning establishment at 22 Maple street, Summit, N. J.

The Leonard Stradinger Plumbing Company have been incorporated at Springfield, Ill., with a capital of $15,000, to do a general plumbing business. The incorporators are Leo. Stradinger, E. D. Normile and H. A. Nicols, Jr.

Biegel & Phalen is the title of a new firm who have started in the plumbing business at Manitowoc, Wis.

The Conway & McCarthy Company of New York City have been incorporated with a capital of $30,000 to manufacture Heating Apparatus. J. W. Conway, Jeremiah McCarthy and Geo. Botts of New York are named as directors.

A corporation are being organized by H. J. Mathews, Milwaukee, Wis., to manufacture Water Heaters and Radiators. The company will be known as the Water Heater & Steam Generating Company and will have a capitalization of $25,000. The devices which the company are to produce have been patented by E. Detweiler, patentee of the Perfection Gas Stove.

The Roberts Machine Company, Collegeville, Pa., has been sold to W. C. Jennings of the W. C. Jennings Company, formerly at 629 Filbert street, Philadelphia, Pa. The manufacture of Steam and Engineering specialties, &c., will be continued and an office and salesroom maintained at 46 North Seventh street, Philadelphia, Pa.

We are indebted to Joseph T. Ryerson & Son, Chicago, for volumes 5 and 6 of Ryerson's new technical library. The former book is entitled "Boiler Bracing and Braces." It contains an article by W. H. Wakeman on the McGregor crowfoot brace for tubular boilers that was written for the *Boiler Maker and Sheet Metal Worker*. In part second are designs compiled and amplificated by the Hartford Steam Boiler & Construction Company on head bracing and flue spacing. Volume 6 of the library is entitled "Little Giant Pneumatic Tools," these tools being illustrated and described in great variety.

Trade Conditions in Southern New England.

A flying trip through Southern New England finds the retail merchants well satisfied with the amount of summer business.

THE VACATION SEASON.

Some who are not quite contented with the situation make the complaint that they are handicapped in filling orders, as one of the clerks is on vacation. In this section it is the custom for most bosses to give their clerks a summer vacation with pay, the boss himself generally being contented with a few days' fishing or camping whenever he is best able to steal away from the store.

* * *

YANKEES MAKE GOOD DISPLAYS.

Yankee ingenuity is everywhere apparent in little ways of saving work, and in handy arrangements of stocks and tools. It is also shown in the methods of displaying goods, some of which are novel and very attractive. Merchants in New England seem to make a better use of their show windows than those in some sections. Those who carry a line of hardware have discovered that goods attractively shown in windows sell much better when prices are marked clearly than when the price card is left off.

* * *

THE STEEL STRIKE.

Much interest is manifested in the great steel strike. Every business man seems to be following it closely. The scarcity of tin plate and black and galvanized sheets is keenly felt, many dealers being caught with but a very small stock, hardly sufficient for present needs. They seem undecided whether to try to buy for future use or only for immediate wants. This hesitation has cost the dealers in the total many thousands of dollars, owing to the steady rise in prices. Merchants in absolute need of tin plates pay whatever price is asked, and are glad to pay it for prompt deliveries.

* * *

TIN PLATES VERY SCARCE.

A house in one of the larger cities doing a retail and a jobbing business of some size have been patiently waiting for a carload of tin plates ordered last May, and are expecting to wait much longer. Their stock is very low, and they are gingerly supplying good customers with what they have, substituting freely in some cases any goods on hand for those ordered. These are eagerly taken by the retailers.

* * *

BLACK AND GALVANIZED SHEETS.

While the scarcity of black and galvanized sheets is not as severely felt as tin plates, the stove and furnace men are wondering where they will get supplies from, most of them having only enough on hand for immediate uses. Those having sheets for sale are not anxious to dispose of their stock, though they are selling as an accommodation, but are naming materially advanced prices.

* * *

WROUGHT PIPE KEEPS THE TRADE GUESSING.

Wrought pipe is scarce and is held very firmly. Considerable interest is manifested in this line, it being wished that the price might be lowered, though the fear is expressed that it may continue to rise.

* * *

PREFERENCE GIVEN TO LOCAL JOBBERS.

Many dealers prefer to make purchases of the jobbers in the smaller cities rather than of those in New York and Boston. The reason is that they can place their orders more quickly in the nearby cities, the telephone frequently being used for this purpose, that deliveries are made much more promptly and that the neighboring jobbers are more accommodating than the New York and Boston jobbers, both in service and in credits. The prices are about the same, but there is an occasional saving of freights, so that the major part of the trade

goes to the local houses. Some places having direct boat connection with New York obtain low freight rates.

* * *

AN ARMY OF DRUMMERS IN NEW ENGLAND.

Good railway service, good hotels and the nearness of towns probably brings more drummers into this territory than in any other section of the country and the competition between jobbing houses is very sharp. Most travelers call on their customers about every two weeks, some weekly and others do not complete their circuits inside of a couple of months. That the trade appreciates frequent calls from the traveling fraternity is illustrated by the remark of a well to do merchant in a Connecticut city who said that he always tried to give his orders to the men who called frequently, and that he very seldom placed an order with the drummer who called only occasionally.

* * *

MARKET REPORTS AND QUOTATIONS.

The opinion was everywhere expressed that the prices as published in *The Metal Worker* were of considerable use in estimating and in buying. A dealer with a certificate of membership in the Master Plumbers' Association hanging over his desk said that *The Metal Worker* should not print prices, because they are seen by others than those in the trade. In answer to this he was told that the paper did not cater for a circulation outside of the trade and that there were very few names on the subscription list of persons not actively in the business, so that if any one in his town saw the paper, besides his single competitor, who is also a subscriber, it must be because either he or his competitor permitted him to see it.

"Would you rather have the prices printed or not for your own use," he was then asked, and answered that he wanted the prices but did not want any one outside of the trade to see them.

* * *

DEPARTMENT STORES ENTERING STOVE FIELD.

Department stores have invaded New England, and the stove man has been forced to appreciate his presence, for now it is the regular thing for these stores to carry cooking and a few heating stoves. These are generally of a cheap make, and are sold on the installment plan for $1 down and $1 a month until paid for. Much complaint comes of the poor quality of stove pipe used, which seldom lasts over one season, it is claimed.

* * *

HEATING STOVES AND REFRIGERATORS CUT.

Heating stoves are not sold to a very great extent, for the work of setting them is frequently too difficult for the department store man to do, as he is generally ignorant of the stove business. Refrigerators have been cut so by these stores that there is no profit in them for the stove dealer, and some merchants have decided not to handle the line at all next year. Some of them are endeavoring to dispose of their stock at cost.

* * *

WANTED—A GOOD SHOP SYSTEM.

There is an evident demand for a good, simple system for keeping track of time and materials used on plumbing, heating and tinning jobs. When asked as to the system employed to keep track of costs on this work, several live and progressive dealers explained that unless they forget to do so, they charge all materials taken out and credit them if they are brought back. The time is then figured on the proprietor's recollection of the time the journeyman has been away from the shop. This system is obviously too crude for twentieth century merchants. The honest dealer is apt to remember too little, while his more grasping competitor has the tendency to have too much of a memory when making out bills.

* * *

PROSPERITY MET EVERYWHERE.

Prosperity seems to be met with almost everywhere, and there are surprisingly few grumblers. It is seldom, however, that one goes into two stores on the same block and hears the same story.

Mr. A. was asked "How is business?"

"Business is fine," was the reply. "We have nothing to complain of. Last year we did 25 per cent. more business than the year before, and our business for the first six months of this year is exactly 25 per cent. ahead of last year. If it keeps on growing in this way I do not know how we will handle it."

Passing on to Mr. B.'s store, *The Metal Worker* representative, during a pleasant conversation with the proprietor, asked, "How do you find business?"

"Business was never better," Mr. B. said. "We have no complaint to make. Our business this year is 25 per cent. ahead of last year's, and we did a business last year 25 per cent. greater than the year before. If trade keeps on increasing this way, I do not know how we can take care of it."

It is rather odd that the two leading merchants in the same town should have their business increase so rapidly, and at just the same rate, neither being affected by the prosperity of the other.

NEW YORK MASTER PLUMBERS' OUTING.

The annual outing and Rhode Island clambake of Manhattan Branch of the Master Plumbers' Association of New York City took place at the Crocheron Hotel, Bayside, Long Island, last Wednesday, and was a day of enjoyment for every one who attended it. Among the guests present were General Geo. D. Scott of the Building Department, Superintendent J. C. Wund of Department of Highways, G. G. Stillwell and Ed. Kiersky of the same department, Commissioner Dalton of the Water Department, Messrs. Lewis and McAllister of the same department, Sanitary Superintendents Dewar, Rodman and Horsman of the Board of Education, Deputy Commissioner Donohue and Cashier Kramer of the Sewer Department, Assistant Corporation Counsel Steinert and Inspector Sullivan of the Health Department, Superintendent Bart. Donovan of the Department of Public Buildings, and last, but not least, a delegation from Brooklyn Branch, consisting of Messrs. Smyth, Gleason, Bosch, Donegan and W. M. Brown.

The games, which were run off in good order by the committee in charge, were as follows: Baseball game between the plumbers and supply trade for refreshments and a bound volume of the *Plumbers' Trade Journal*, won by the plumbers with a score of 16 to 12. The football team got a box of cigars as a prize. The shooting match, which had the most entries, 65 in all, distance 150 yards, was won by John Yule with a score of 22 out of a possible 25; G. G. Stillwell being second with a score of 21. The prizes given for the contest were jeweled stick pins.

Geo. Schweppenhauser won the fishing match, catching 13 fish in the time allowed. The catch included several eels, which at once found lodgings in various pockets. Major Magner of the Metropolitan Supply Company won the quoit contest, and W. M. Brown of Brooklyn won the fat men's race. The latter would never be suspected of weighing 195 pounds. The running broad jump was won by J. M. Heatherton.

The inevitable badger was pulled amid great excitement by Joseph Smith, representing W. H. Hussey & Son. Considerable money changed hands as the result of this fight, and although the dog was willing to do his best the badger won by his pull. The low water prevented the swimming and boat races, but other games were substituted.

The clambake was opened at 5 p.m., and was fully up to the standard of past years.

An interesting report on irrigation has been published by the State Engineer of Nebraska, which shows that there are now in that State 3924 miles of irrigating canals, which have cost $4,773,084 and which water 1,698,831 acres of land. One mile of canal irrigates 433 acres and the cost of a mile of canal is $1216, making a cost of less than $3 per acre. As the average increase in the value of the irrigated land is estimated at $10 per acre for the whole State, the profitableness of irrigation is very clearly demonstrated.

Stove and Hardware Dealers.

Best & Thompson, dealers in Hardware, Stoves, Crockery, Bicycles, Tinware, &c., Libby, Mont., have opened a branch store at Jennings, Mont.

Thompson & Dufur, Fairfax, S. D., have bought the Hardware part of the general stocks of C. A. Johnson & Co., Horst & Trautmann and Forbes & Co. of that place and will combine the goods thus purchased with their own stock of Hardware, Tinware, Stoves, &c.

Stokes-Evans Hardware Company, wholesale and retail dealers in Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, Furniture, &c., Macon, Miss., have moved to more commodious quarters, which have been modernly equipped throughout. Their main store is 80 x 190 feet in dimensions.

Broadway Bicycle & Sundry Mfg. Company, 7 and 9 Warren street, New York, intend to add a jobbing department, comprising Builders' Hardware, Shelf Goods, Kitchen Utensils, &c., which will be conducted in conjunction with their Bicycle Sundry business under the same firm name. They would be pleased to receive manufacturers' catalogues, discount sheets, &c.

Houston Hardware Company have succeeded H. H. Holtkamp, at Houston, Texas, and will do a wholesale and retail business in Hardware, Stoves, Tinware, Wooden Ware and Sporting and House Furnishing Goods. The company would be pleased to receive catalogues, &c., relating to the above lines.

Kirk-Latty Mfg. Company, Cleveland, Ohio, have materially increased their facilities for manufacturing Stove, Tire and Carriage Bolts, Stove Rods, Machine Screws, Rivets, Tacks, Cold Pressed Nuts and Special Bolts, Screws, Rivets, Nuts, Tacks, &c. They have also awarded a contract for the erection of another story to a portion of their factory, which will give them an addition of one floor 275 x 50 feet. They have also materially increased the size of their office and will soon be in condition to care for a largely increased volume of business. They have just issued a fine new catalogue, embracing the lines mentioned above, which will be cheerfully sent on request.

TRADE NOTES.

The Detroit White Lead Works, Detroit, Mich., have increased their capital stock from $400,000 to $500,000.

The Joseph Dixon Crucible Company of Jersey City, N. J., are sending out a little pamphlet referring to the use of Graphite for steam, gas and electric automobiles. Reference is also made to Dixon's Graphitoleo, a preparation of finely pulverized graphite and pure vaseline, which is highly recommended for chains and gears. The company are prepared to send free samples of these graphite products to any persons interested in the matter.

Hull Brothers, Gasport, N. Y., manufacturers of Friend Spray Pumps, Spraying Outfits, Gasoline Engines, Cream Separators and other light farming machinery, have been succeeded by the Friend Mfg. Company, recently incorporated, who will continue the business on an enlarged scale. A new work shop, 30 x 150 feet, two stories high, and a new foundry, will shortly be erected. Such other buildings as may be needed from time to time will be erected. The directors are George Hull, Warren N. Hull, Arthur B. Hull and John C. Hull of Gasport; R. E. Erdman, Thos. Sulley and M. W. Fuller of Buffalo.

The Bremer Machine & Tool Company have been incorporated for the purpose of operating a manufacturing plant at Kalamazoo, Mich. They will manufacture a standard line of Punches, Presses, Shears, Milling Machines, Horizontal Forging Presses, Hand and Power Presses, Foot and Power Hammers, Brass Goods and the Bremer Check Valve. The officers of the new company are as follows: President, C. J. O'Hara, Detroit; vice-president, Frederick K. Wormer, Detroit; treasurer, C. C. Wormer, Detroit; secretary, F. G. Bremer; superintendent, G. J. Bremer.

The Schrader Metal Company, Wallingford, Conn., manufacturers of Metal Novelties, have organized with a capital of $10,000. The company will absorb the business formerly carried on under the name of Schrader, Smith & Co. The officers are W. H. Ebert, president; Noah Linsley, secretary; L. R. Cook, treasurer, and Charles F. Schrader, manager.

The Lucas Pump Company, Toledo, Ohio, manufacturers of Galvanized Iron Pumps, will shortly occupy a large two-story brick and frame building on Fifth street, their present quarters being entirely too small for their rapidly growing business.

The H. F. Brammer Mfg. Company, Davenport, Iowa, have found the demand for their Washing Machines increasing so rapidly that they recently discontinued the manufacture of fixtures and furniture to enable them to use the building devoted to that department in extending their facilities for turning out Washing Machines. Even this enlargement of their factory operations is inadequate for the extent of their trade, and they have decided to erect an additional building. The company manufacture the Original Brammer Lever Machine, the O. K. Rotary Machine, and the O. I. C. Pendulum Machine. The leader of these machines is the O. K., which steadily grows more popular. The company have just issued a folder illustrating these machines, which shows them lithographed in their exact coloring. The folder is artistically executed, being a very fine sample of color printing.

The Syracuse Smelting Works, Syracuse, N. Y., manufacturers of Babbitt Metal and Solder, have enlarged their plant by two additions, 30 x 40 feet and 20 x 24 feet respectively. A new stock house has also been erected. Several furnaces and new machinery have been installed and the melting capacity increased about 2 tons of Babbitt and Solder per day. The company advise us that if their business increases at the rate it has during the past year they will be compelled to get a larger plant located elsewhere. The company have also increased the melting capacity of their Montreal works about 1½ tons per day by the installation of two more furnaces.

Buyers of Tin Plates and Sheet Iron, who have difficulty in obtaining supplies owing to the strike, will be interested in the advertisement of the N. & G. Taylor Company of Philadelphia, in this issue. This concern solicit orders for Coke Tins and Terne Plates for September, October and November delivery, also for Black and Galvanized Sheets.

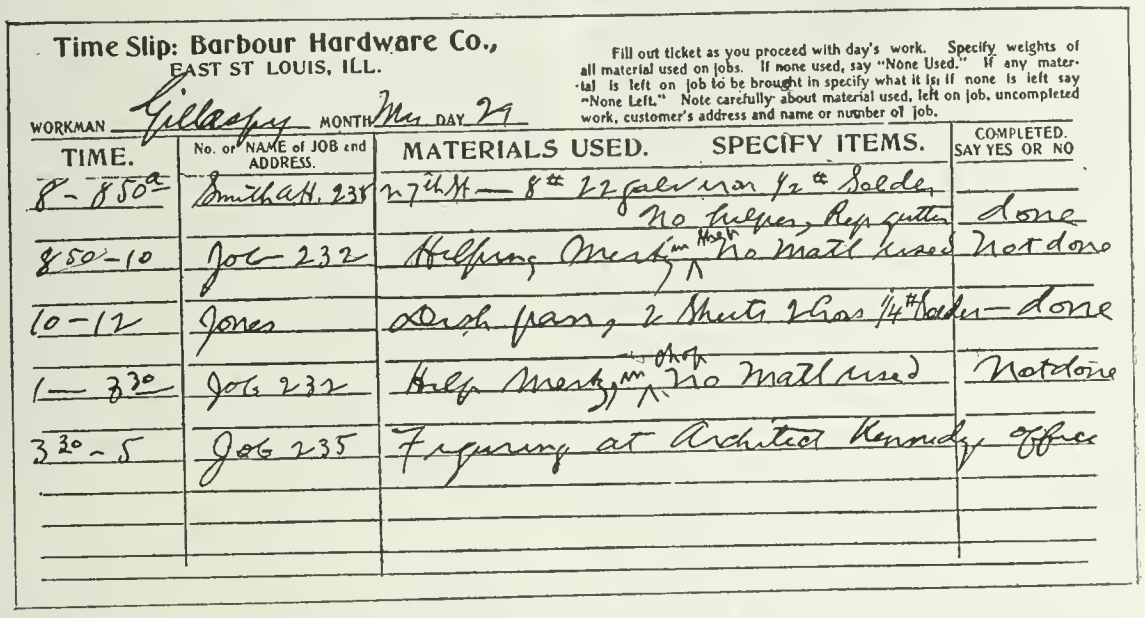
One of the interesting features of the Mines Building in the Pan-American Exposition is the exhibit of nickel ores. Oregon has a fine display of nickel ore taken from mines in the southern part of the State, which is said to be far superior to any of the French nickel ore. Washington State also has nickel deposits, which give a fair prospect of developing into importance, but the deposits of nickel ore in Oregon are the most important in this country and promise to develop into immensely rich properties in the near future. The nickel mines in Nevada have been recently developed to some extent and are said to have proved quite valuable. Specimens from all these different States are shown at the Pan-American, together with some good samples of ore from the Sudbury mines in Ontario, Canada. Thomas A. Edison is taking a great deal of interest in the nickel industry of this country and is reputed to have engaged the services of experts to investigate the same, with the view, supposedly, of becoming actively interested in nickel properties.

The following recipe for cleaning marble is given in the *National Architect and Builder:* Brush the dust off with a piece of chamois, then apply with a brush a good coat of gum arabic about the consistency of thick mucilage; expose it to the sun or wind to dry. In a short time it will peel off. If all the gum should not peel off, wash it with clear water and a clean cloth. If the first application does not have the desired effect, it should be tried again.

KEEPING TRACK OF SHOP JOBS.

The system for keeping track of jobs herein described is in use by the Barbour Hardware Company, East St. Louis, Ill. Much attention has been given by them to the subject of ascertaining which were the money making departments of their business.

The company handle Stoves, Hardware, Furnaces, Glass and Painters' Supplies. In addition sheet metal work is done and Guttering, Skylights and Cornices are furnished. To separate the store and shop business slips are used, as shown in the accompanying cuts. Every day each workman fills out a slip as illustrated in Fig. 1. All material is accounted for as it is used, and the time and material are charged up as the jobs proceed. All contract work is known by a number, while small jobs are not given a number.



Time Slip: Barbour Hardware Co.,
EAST ST LOUIS, ILL.

Fill out ticket as you proceed with day's work. Specify weights of all material used on jobs. If none used, say "None Used." If any material is left on job to be brought in specify what it is; if none is left say "None Left." Note carefully about material used, left on job, uncompleted work, customer's address and name or number of job.

WORKMAN Gillaspy MONTH Mar. DAY 27

TIME.	No. or NAME of JOB and ADDRESS.	MATERIALS USED. SPECIFY ITEMS.	COMPLETED. SAY YES OR NO
8–8 50 a	Smith Att. 235	2 7th H — 8 # 22 galv iron ½ # Solder	
		No helper, Rep gutter	done
8 50–10	Job 232	Helping Mentz 1m 1H No matl used	Not done
10–12	Jones	Dish pan, 2 Mentz 2 Cas ¼ # Solder	done
1–3 30	Job 232	Help Mentz 1m 1H No matl used	Not done
3 30–5	Job 235	Figuring at Architect Kennedy office	

Fig. 1.—Time and Material Slip.

Job No. 232.

February 1.
Kehlor job.
Kennedy's office.

129 feet 20 inch Box Gutter IX Tin, 20c....	*$25.80*
80 feet 14-inch IX Valley.....	*8.00*
2 Chimney Backs.....	*.50*
200 Tin Shingles.....	*4.00*
40 feet 3-inch Conductor.....	*4.00*
8 3-inch Elbows.....	*.80*
200 feet Ridge Roll.....	*16.00*
2 small Finials.....	*1.00*
	$60.10

Our job. March 1.
Louis, Contractor.

It will be seen that the last item on the slip in Fig. 1 is of a workman figuring on a job at an architect's office. The items are taken from the plans and copied on a job book, as shown above. The items are extended at retail prices, and the bid for the work is rendered in accordance with the total shown on the job book. As soon as notification is received that the company are the successful bidders the words "Our job" are written on the job book. The foreman then takes the items from the job book and distributes the work in the shop.

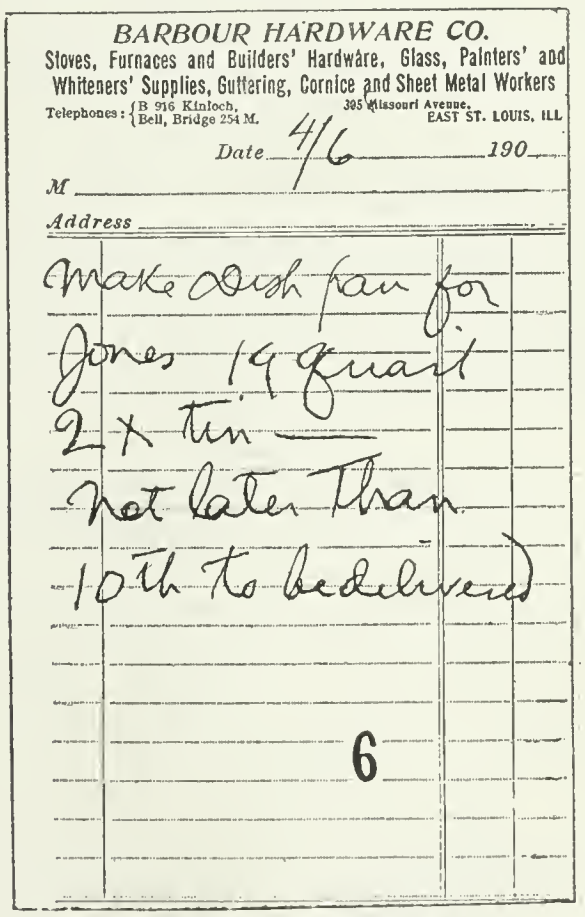
The foreman looks over the job book daily, and takes the work to the shop as it comes in.

While working on a job in the shop the workman enters his time on the time slip as "On job." The time slips are posted each day on cards kept in a card index system form representing the job, and when completed, the total time and material are on one card. The percentage of profit is then added and posted on the books. When material is taken out of the shop for a job, only that called for by the contract is taken. If additional material is required it is entered on time slip as "Extra material used."

A portion of the time spent on the job No. 232 shown on the card is recorded on the second line of the time slip, Fig. 1. The "drop in trade" orders are taken on a duplicate charge slip, as shown in Fig. 2. The slip is card from the index, and charged up on the books, the same as with contract work.

The job recorded in Fig. 2 is an order to make a Dish Pan for Jones, the time and material for which are entered on the third line in Fig. 1.

The half of the charge slip that is retained at the office enables the company to know how much work there is to be done, to see that no jobs are left undone,



BARBOUR HARDWARE CO.
Stoves, Furnaces and Builders' Hardware, Glass, Painters' and Whiteners' Supplies, Guttering, Cornice and Sheet Metal Workers
Telephones: {B 916 Kinloch, Bell, Bridge 254 M.} 305 Missouri Avenue, EAST ST. LOUIS, ILL

Date 4/6 190

M

Address

Make Dish pan for Jones 14 quart 2 x Tin — not later than 10th to be delivered

6

Fig. 2.—Duplicate Charge Slip.

to decide how much each job costs them, also how much each tinner makes for the company. If a workman fails to come up to the standard, he is cautioned, and if he continues to be under the average his wages are reduced, or he is discharged.

The plan has worked very satisfactorily and the 6 to 12 workmen take an interest in keeping up their average. It requires about 30 minutes of the bookkeeper's time each day to keep this record.

The Steel Strike.

While the situation in regard to the steel workers' strike shows little change from that of a week ago, the conviction is growing in the trade that its termination will not be much longer delayed. The officials have studiously avoided any steps which might lead to serious trouble, withdrawing in some cases at the danger of a clash. A large proportion of the capacity of the sheet mills is now turning out material, and additional workmen are being diverted to the tin plate rolling mills. The hoop mills are gaining steadily, so that, speaking broadly, it is chiefly in the tin plate and tube industry that the supply is most seriously affected. It is understood that when the strike was threatened the American Can Company purchased quite heavily in England. One large electric company are reported to have also placed an order in England for a good sized lot of sheets.

The official statement issued by the American Tin Plate Company to the effect that no negotiations were on with the Amalgamated Association for a settlement of the strike and that the men now working in the tin mills would be retained defines clearly the position of the United States Steel Corporation and shows that only a complete surrender of the Amalgamated Association will end the strike. Official denial has been made that through the efforts of third parties a conference would soon be held between officials of the United States Steel Corporation and the Amalgamated Association that would end the strike. The trouble has reached that stage that only a complete surrender of the strikers will end the trouble. The United States Steel Corporation are paying no attention whatever to overtures emanating from the Amalgamated Association, but are going ahead, getting their idle mills started as fast as possible.

THE SHEET MILLS.

The situation in the sheet mills has not shown much change since last week. The American Sheet Steel Company are getting out about 60 per cent. of their total capacity in the nonunion mills in the Vandergrift district. New mills are being added at Vandergrift, and in a very short time fully 75 per cent. or more of the entire output of sheets of the American Sheet Steel Company will be made in the mills of the Kinkiminetas Valley. Attempts were made early this week to start the Reeves works at Canal Dover, Ohio, but little progress has thus far been made, owing to the assaults made on the new men by outsiders. An injunction has been granted at that place by Judge Wing to prevent the strikers from interfering with the nonunion workers. A part of the Ætna-Standard Works at Martin's Ferry, Ohio, is being moved to Vandergrift, and the Dennison and Dresden mills are likely to be taken there.

TIN PLATES.

The American Tin Plate Company are making good progress in getting their idle mills started, in spite of the fact that the strikers have committed many acts of violence and intimidated the new men in every way possible. The Star Works, an eight-mill plant in Pittsburgh, has been started with nonunion men who are quartered in the mill. Four mills are now running, and it is intended to have the entire eight going inside of a week or ten days. The Crescent Works, at Cleveland, a six-mill plant, has also been started, many of the old men having returned to work, and the mill is running to about full capacity. Attempts have been made to start the Beaver Works, at Lisbon, and the Irondale Works, at Irondale, Ohio, but the strikers have committed so many acts of violence at both places, and have also made assaults on the men, that they have decided to ask the courts to grant injunctions restraining the men from interfering with the operation of the mills. It is stated that the Demmler Works, in the Pittsburgh district, will be started on Monday. An official of the American Tin Plate Company says that the Star, Crescent, Beaver and Irondale works have been put on the nonunion list, and that the Amalgamated scale will not be signed for these mills regardless of how the strike may be ended.

SHAFFER'S STATEMENT.

At a mass meeting of strikers held in Pittsburgh Tuesday night President Shaffer of the Amalgamated Association made this statement:

"If the United States Steel Corporation will sign the scale for the same mills for which the scale was signed last year; if they will pay the present Amalgamated scale for all mills now on strike, and if they will permit the men in nonunion mills to organize, if they see fit, the Amalgamated Association stands ready to make a settlement."

It can be safely stated that the strike will never be ended on terms given above. The Steel Company will not sign the scale for the mills that were signed for last year, but which have been started up nonunion since the strike started.

There is no doubt whatever but that the strike would have been ended before this had it not been that the rank and file of the Amalgamated Association is being deluded by promises of the leaders that a settlement will be reached within a week or two on terms favorable to the Amalgamated and that all the strikers would be given their old posltions. It can be stated positively that there are no peace negotiations on between officials of the United States Steel Corporation and the Amalgamated Association, and the strike can be ended only by the men returning to work.

Lloyd Booth.

Lloyd Booth, a pioneer iron manufacturer and president of the Lloyd Booth plant of the United Engineer & Foundry Company, died on August 27, at his home in Youngstown, Ohio, after an illness of only 24 hours. Mr. Booth was 67 years of age. Before the Civil War he was a locomotive engineer in the South, and on the building of the Erie shops at Susquehanna came North to become superintendent of them. Soon afterward he removed to Youngstown and established a foundry and machine plant, which was conducted under the name of the Lloyd Booth Company until its recent consolidation with Pittsburgh plants under the name of the United Engineer & Foundry Company. The concern made a specialty of the manufacture of rolls and rolling mill machinery, and equipped many of the large sheet and tin plate mills of the country. Mr. Booth is survived by his widow, a daughter and a son.

New Sheet Mills at Sharon, Pa.

It is officially announced that the Sharon Steel Company of Sharon, Pa., have let contracts for the erection of ten sheet mills and four additional open hearth furnaces. The new sheet mills will have a capacity of about 100 tons a day. Contracts for the erection of the buildings have been let to the American Bridge Company of Pittsburgh, and McIntosh, Hemphill & Co., of that city have been given large orders for machinery. The second set of ten mills at the company's tin plate plant will, it is expected, go into operation about October 1, and the new sheet mills will be ready six months later than that date. The latest additions to the Sharon Steel Company's plant will involve an expenditure of something like $1,000,000, which, with the plants already in operation or under construction, will represent an investment of more than $8,000,000.

FLASHINGS.

Joseph T. Ryerson & Son, Chicago, advise the trade by means of a small circular which they are distributing that they have in warehouse, in addition to their regular stock, a number of special sizes of Apollo Best Bloom Galvanized Sheet Steel, also Bessemer, one pass, cold rolled, box annealed Sheets. These stocks being naturally somewhat limited, the firm advise those who are needing such material to write or telegraph at once for prices, stating quantity desired.

Robert Reetz, Pawtucket, R. I., has the contract for Skylights for the Pawtucket Mfg. Company's new mill.

C. G. Brunnckow, Providence, R. I., manufacturer of Cornices, Skylights, Ventilators, &c., has recently executed a number of important contracts, including all the copper work on the State Normal School, the Rhode Island State House, the Public Library Building and the Union Trust Company's Building, as well as several theaters and other large structures in the city of Providence. Mr. Brunnckow started in business 13 years ago as a member of the firm of L. J. Scheltzer & Co., whom he succeeded in 1894. He is the possessor of a plant admirably qualified for turning out finished work of the best quality.

Rourke Brothers of New Haven, Conn., have just finished a Skylight for the new building of the New Haven Savings Bank. The Skylight is of copper with steel frame, 76 feet long and 26 feet wide, and is said to be the largest Skylight of its kind in New England.

The Berger Mfg. Company, Canton, Ohio, are distributing a little four-page folder illustrating by means of fine half-tone engravings some of the more attractive designs of their Metal Ceilings and Side Walls in Colonial, Rococo, Empire and Greek styles.

Contracts for $250,000 worth of machinery have been awarded by the Jackson Iron & Tin Plate Company, recently incorporated with a capital stock of $300,000, who are about to erect a large independent Sheet and Tin Plate plant at Clarksburg, W. Va. Work on the construction and equipment of the plant has already begun and will be actively prosecuted so as to get it into working order at the earliest possible date. The plant will consist of 14 mills and will have a potential daily capacity of 700 tons of Sheets and Tin Plates. Five hundred men will be employed.

A four-mill Tin Plate plant, it is reported, will be erected at Johnstown, Pa., by a company composed of local capitalists headed by W. K. Du Pont. The new concern will draw their supply of raw material from the Cambria Steel Company.

The Columbia Enameling & Stamping Company of Terre Haute, Ind., are preparing in that city a plant to consist of a stamping department, annealing shop, warehouse, power house and a number of smaller buildings at a cost of about $200,000.

A persistent rumor is current among the trade pointing to the probable absorption of the American Can Company by the United States Steel Corporation after the present labor troubles are settled. A relationship already exists between the Can company and the American Tin Plate Company, in that several of the directors are on the boards of both companies. It is also understood that a close understanding exists between the two corporations which works to the advantage of both in the matter of supplies of raw material. It is therefore natural to conclude that the ultimate destination of the Can company will be to become one of the constituent parts of the big Steel Corporation.

A. W. Brown and W. P. Deval, who were officials and large stockholders in the Cambridge Iron & Steel Company, at Cambridge, Ohio, before they were taken over by the American Sheet Steel Company, are reported to have bought a large site of land at Cambridge and may build a Sheet mill on it.

The Carnahan Tin Plate & Sheet Company, Canton, Ohio, who will make high grade Iron and Terne Plates and Sheet Steel, advise us that they will be ready to start six mills about November 1 next.

There is some talk of a new Tin Plate mill being built at Meyersdale, Pa. The citizens of that borough propose to issue bonds to the amount of $15,000, which will be given to the new company, and 6 acres of ground.

The Ferricup Metal Company of Providence, R. I., manufacturers of Copper and Brass Coated Steel Sheets, Copper Wire, Bars and Sheets, &c., are looking for a good mill with about 25,000 square feet of floor space, mainly on the ground floor, if possible, for heavy manufacturing, and with plenty of land on which to expand. They wish to be near a railroad with spur track privileges, and prefer water power. If a suitable mill cannot be secured the company propose to secure a good mill site and build a mill adapted to their requirements.

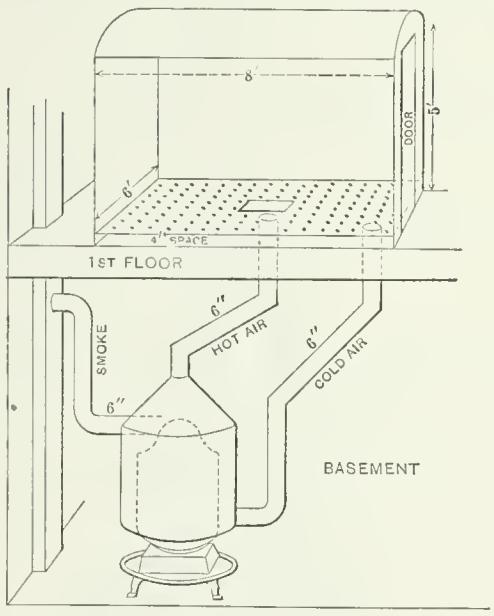
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

TROUBLE WITH DRYING OVEN.

From D. & K., Lathrop, Mo.—I have a problem that I would like to have solved in *The Metal Worker*. We want to construct an oven or drying room for the purpose of drying a stiffening material made of two or three thicknesses of muslin saturated with paste, each piece being stretched on a frame about 3 x 8 feet in size. We constructed an oven 8 feet long, 6 feet wide and 5 feet high, covered tight with galvanized iron, with a double bottom like diagram shown, but it fails to give satisfaction. It gives plenty of heat, but holds the moisture and does not dry the material. We wish to dry about 20 at one time. At present we have a 12-inch



Trouble with Drying Oven.

oak stove, inclosed like a furnace, connected by a 6-inch hot air pipe with the bottom chamber of the dryer. This air is distributed all through the drying chamber through ½-inch holes 4 inches apart in the false bottom, which is 4 inches above the bottom. The hot air is delivered at one end under a sheet iron plate about 16 inches square, and the air is returned to the heater by means of an 8-inch cold air pipe leading from the bottom of the dryer to the bottom of the stove casing. As our apparatus is not satisfactory, we will be glad to receive any information that will aid us in constructing a successful drying apparatus.

Answer.—In the sketch the return or cold air pipe appears to be drawing the air from the drying chamber and feeding it to the furnace, which, if so, is wrong. The air should be drawn from out of doors as cool as possible, and the drying room should be ventilated at the top by small ventilators at each corner, say of 3 inches diameter, which will give about an equal area with the inlet pipe.

LENGTH OF SKYLIGHT BARS.

From F. A. H., Jersey City, N. J.—In looking through some old *Metal Workers* I came across an item, November 4, 1899, in a letter from "A. T. E.," Pittston, Pa., in which you advise him of an improved method of obtaining the length of skylight bars. I would be very glad to have you explain this method in *The Metal Worker*.

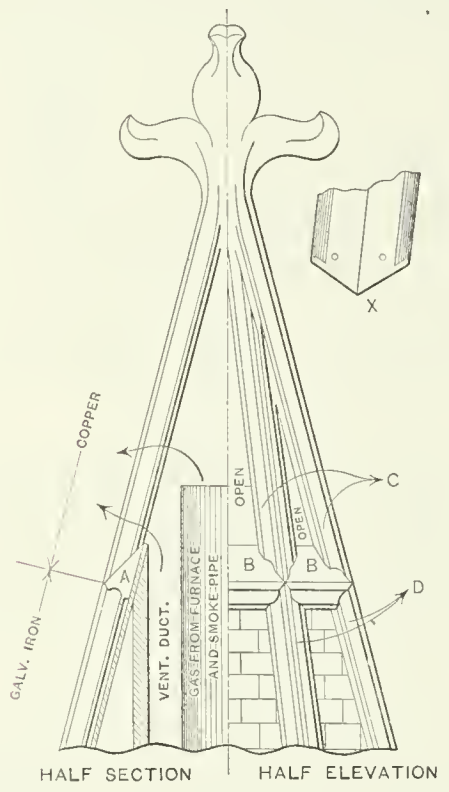
Answer.—If our correspondent will look through the columns of *The Metal Worker*, in the Letter Box department, in the issues of January 12 and March 16, 1901, he will find the short rules for obtaining the lengths of hip, jack and common bars.

CONSTRUCTING A COPPER SPIRE.

From W. L., Troy, N. Y.—Will you please give us your opinion as to the advisability of constructing the apex of a spire by continuing the ribs which form the hip moldings and ornamenting with a finial, the work to be executed iu heavy copper, but leaving out between the copper rlbs what is really the roofing, so as to permit a smoke pipe to be run up through the center of the tower, thus allowing the hot gases from the furnace to escape between the copper ribs? Is copper the proper material for use in such a case?

I would also like to know whether sheet lead is best for valleys on slate roofs.

Answer.—In the accompanying illustration we give a reproduction of our correspondent's sketch, showing a half section and half elevation of the spire in question. A smoke pipe runs through the center of the tower, the heat from which is supposed to create a draft for the escape of the foul air in the vent duct. The mold A in the half section and B B in the half elevatiou indlcates



Constructing a Copper Spire.

the deck mold above the roofing, and above the deck mold the ridging D is to continue to the apex of the spire, with a finial over the same, and leave the openings C above the deck mold for the escape of the gas, smoke and foul air.

The plan is a good one, and if the lower hip ridges are to be made of galvanized iron we would suggest that the deck mold A be made of tinned copper to avoid any electrical actiou between the galvanized iron and copper, making the upper ridging and finial of 20-ounce cold rolled copper, which is not likely to be destroyed by the smoke or gas. It would be well to line the inside of the duct with galvanized iron to avoid any danger of fire from sparks, unless the spire is of fire proof construction.

While sheet lead makes a good valley lining, we would suggest the use of soft copper—14 or 16 ounce weight—laid in 8 feet lengths without any nailing into the valley, the sheet to be fastened by means of copper cleats. This allows for the expansion and contraction of the metal. A sketch is shown at X of a valley with the water locks O and O on each side, which allows any leakage to follow and drain out at the bottom.

CLEANING ZINC.

From H. M. K., Cortland, N. Y.—I tried the recipe of "M. J.," Flatbush, N. Y., mentioned iu *The Metal Worker* of July 20, for cleaniug zinc, and had no luck at all; then tried one teaspoonful of oxalic acid in ½ pint of water—no good. Theu put iu another, still no good. Perhaps did not leave the acid on long enough. Gave it up as a failure. Would like to know from "M. J." how he does it. I could not do half as well with it as with common kerosene oil.

MAKING A CELLAR WATER TIGHT.

From L. T. M., Pottsville, Pa.—For the information of "F. R.," Coalville, Utah, who asks in *The Metal Worker*, August 24, about a water tight cellar, I would say that I have just completed a dwelling house and had to contend with a wet cellar. Water stood in the cellar and the mud and slush were several inches deep and would not drain off. I finally concluded to cement the cellar bottom and I filled in on top of the mud about 6 inches of concrete, composed of cinders and 2 inches of cement, with a top coat of the best cement. At first water came through the cement, but this ceased when the cement hardened, which took about a week. This composition made the best water tight floor I ever saw. There is not a bit of water to be seen and the cement is much harder than if the cellar had been dry.

From O. A. S., Elgin, Ill.—Regarding the inquiry of "F. R.," Coalville, Utah, as to the way to make a cellar water tight, I would suggest that the cellar bottom be leveled up with sand and a layer of cement about 2 inches thick lald on, running it well up against the walls. After the cemeut is dry coat the floor and the walls on the inside with hot asphalt, after which pave with brick dipped in asphalt, covering with another coat. I would then suggest that the outside of the walls be coated with 1 inch of cement, running it down below the cellar floor level and covering this after it is dry with a coat of hot asphalt. I believe that if these iustructions are faithfully followed a water proof cellar will result. The plan may prove somewhat expensive, but my opinion is that the job ought to be done well if at all.

TROUBLE WITH STEAM PUMP.

From D. E. S., Pennsylvania.—Your valuable paper has helped so many out of trouble that I write to get some assistance in the following case: I was called to the Pocono Mountains to examine a steam pump that supplied about 12 or 15 cottages. The trouble is that when the pump (a Worthington Duplex) makes 60 revolutions all is quiet, but if the speed is increased to 68 revolutions there is a hammer in the pipe at all the cottages and apparently it is in the suction pipe. The suction pipe is 2 inches in diameter and about 15 feet long, including three elbows and about 8 feet lift. The discharge pipe is 1½ iuches, pumping into a reservoir 200 feet high, the latter pipe beiug used for supplying cottages from the reservoir. I put in a rubber hose on the line to the reservoir at the branch of the first cottage from the pump, but it did not help it much. I will now put on a vacuum chamber near the pump on the suction pipe, but thought probably your army of readers could suggest a better remedy. The pressure is increased about 40 per cent. when pumping 60 revolutions of 25 gallons per minute. I removed foot valve, thinking that might cause it, but the trouble was the same. The pump has no air chamber. The additional increase in speed of eight revolutions increases the pressure about 50 per cent.

Answer.—The water hammer is no doubt on the force side of the pump. The long line past the cottages and to the reservoir is subject to vibration of the water in the line by the quick action of the pump. The remedy is to put a large air chamber on the force pipe near the pump, so arranged that it will be supplied by air from snifting cock on the suction pipe, which should be opened for a minute whenever the puump hammers. As it is well known that water under pressure absorbs the air in the air chamber in a short time, some means of supplying air must be used.

WHO MAKES THE NASH VENTILATOR?

From C. S. M., New Haven, Conn.—Can you inform us who is the manufacturer of the Nash ventilator?

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is about ¼c. lower, but closed firmer.

Copper is quiet and unchanged.

Pig Lead is in fair demand and firm in price.

Spelter is in better demand and a shade higher.

Antimony shows no change.

Nickel is firm and unchanged.

Aluminum continues active at former prices.

Tin Plates are very scarce and high.

Black and Galvanized Sheets are in very active demand and scarce. Spot Sheets command high prices.

Patent Planished Sheets have been advanced about 1¼c. owing to increasing scarcity.

Old Metals are dull and weak.

Scrap Tin Plate is $2 a ton higher.

Sheet Copper rules firm and in good demand.

Pig Iron prices are unchanged, but demand is lighter.

Hardware is moving freely, with prices firm.

Wrought Iron Pipe was sharply advanced this week; great scarcity of Pipe is noted.

Plumbers' Brass Work prices are unchanged; a good demand continues.

Enameled Bathtubs are very scarce.

Furnace Pipe and Fittings were advanced in price this week.

Bolts and Nuts have been advanced in price.

Wire Nails are moving in good volume at unchanged prices.

Cut Nails are unchanged.

Wire is still in heavy demand and firm in price.

Coil Chain has been advanced in price.

Linseed Oil has undergone a further reduction of 7c. a gallon in price.

Spirits Turpentine is in light demand and without change in price.

METAL MARKET.

NEW YORK, August 30, 1901.

Pig Tin.—Owing to recent heavy arrivals spot Tin has become plentiful and prices slowly declined day by day until Thursday, when a reaction took place, owing to a rise in the London market, bringing prices again up about ¼c., and leaving them ¼c. lower than those ruling at the date of our last report. Straits Pig in small lots is quoted by jobbers to-day at 27c. to 27¼c. per lb.

Copper.—No new developments are to be reported in this market. Prices are without change and transactions on a limited scale. Small lots of Lake Ingot continue to be quoted at 17¼c. to 17½c. per lb., and Casting Copper at 16¾c. to 17c. The exports this month have been small, amounting to about 4800 tons, while imports during the same period footed up to 4500 tons. The London market this week experienced a slight rally on the strength of rumors of an international Copper combination, which have since been denied, and are now believed in the trade to have been circulated for stock jobbing purposes.

Sheet Copper.—Manufacturers and dealers report a very fair demand for this article, showing that a considerable amount of Sheet Copper is going into consumption, especially in connection with architectural work on new buildings. The scarcity of Galvanized Iron and other Sheet metal, owing to the Steel strike, has favorably affected the demand for Sheet Copper by cornice makers. Prices remain firm on a basis of 21c. per lb. from store.

Pig Lead.—Business, while not exactly brisk, may be described as moderately active. Prices remain steady and unchanged, small lots of American Pig being quoted at 4.60c. to 4.62½c. per lb. St. Louis reports indicate a rather dull market, with no change in prices.

Spelter.—The demand for Spelter has picked up considerably and the market has taken on a firmer tone. Spot is not so plentiful and is quoted a shade higher in large lots. Good Western brands in small lots rule at 4.45c. to 4.50c. per lb. The St. Louis market is reported as easy and quiet.

Sheet Zinc.—The demand for Sheet Zinc is about of average proportions and prices show no change. Jobbers quote 600-lb. cask lots at 6¾c. per lb. and smaller quantities at 7c.

Antimony.—This metal has experienced no change either as to price or condition of business. Cookson's in small parcels is quoted at 10½c. to 11c. per lb., and Hallett's at 8½c. to 9¼c.

Nickel.—Is unchanged and firm at prices which have ruled for some time. Small lots are quoted at 60c. to 65c. per pound.

Aluminum.—A good demand at former prices characterizes this metal. No. 1 Ingot, guaranteed 99 per cent. pure, is quoted in small lots at 37c. per pound, and in 100-lb, lots at 35c.

Tin Plates.—The strike at the Tin Plate mills shows no indications of early settlement, consequently the outlook for the future of Tin Plates remains very uncertain, and the market is in a decidedly unsatisfactory condition. The scarcity of certain sizes of Coke Plates is becoming more pronounced as the days go by, and is now verging on the famine point. The market is so irregular that it is almost impossible to give quotations. Dealers are asking fancy prices for lots which are for immediate consumption, and reports are current of almost ridiculously high prices having been obtained in cases where stock was absolutely needed. The figures usually asked by jobbers in New York and corresponding points for American Bessemer Coke Plates, IC, 14 x 20, are anywhere from $7 to $7.50 per box, and as high as $8 has been asked and paid in some cases. Very little is doing in the Tin Plate market under these conditions. Consumers are not taking anything beyond what they are absolutely forced to purchase, while those dealers who still have any stocks on hand do not need to push their sales by offering any concessions. Stocks of every variety of Plate are extremely light, and some sizes are not to be had for love or money. Two steamers have arrived this week from England, bringing about 23,000 boxes of Tin Plates, all of which are understood to have been appropriated before the vessel unloaded. No change has taken place in the Welsh market.

Sheets.—A few more mills of the American Sheet Steel Company have been started, and this concern are now said to be producing more than half their whole capacity. At the same time dealers and consumers complain of the impossibility of getting anything like the amount of stock that they could use. Orders which were placed as far back as April and May are still unfilled, and consumers are clamoring for stock which their jobbers are wholly unable to give them. The independent mills are profiting very much by the scarcity of Sheets, and are able to get almost any price they ask for Sheets for shipment within 60 days. More business is offered than could be handled in six months, but as the mills are nearly all sold up for the next three months ahead it is almost impossible to place new orders. Almost any price that is asked for either Black or Galvanized Sheets for prompt delivery can be obtained. Jobbers in this vicinity are quoting No. 27 Black One Pass Cold Rolled Soft Steel Sheets at about 4.20c., and Galvanized at 60 per cent. off the list. A

good many new Sheet mills will soon be started, but most of these have their products sold up anywhere from two to four months ahead. Galvanized Sheets continne very scarce and are uuobtainable for anything like early shipment. It is stated that the American Sheet Steel Company are willing to take orders at prices adopted July 1, but without specified delivery. The strike at the Wood mills at McKeesport and the partial closing down of the Wellsville mills have caused a cousiderable shortage of Planished Sheets, which are becoming quite scarce iu the market; consequently jobbers have advanced prices on these goods to about 11c. for the A quality, and 10c. for the B quality, net.

Chicago advices are as follows: Sales agents of the independent mills are unable to promise deliveries under six or eight weeks. Some of the uills are having much difficulty in getting a sufficient supply of Sheet Bars. Consumers are continuing to draw heavily from the stocks of the local merchants, but these stocks are now running quite low, aud it is almost impossible to get certain sizes. The demand is particularly heavy for Nos. 14 to 16 and Nos. 26 to 28 Black Sheets. Stove Pipe sizes are completely gone. No. 27 Black is quoted 4c. to 4.25c., the higher quotation being made by those actually having some stock from which to make shipments. No. 14 is selling at 3c. to 3.10c. Galvanized Sheets are now held at 65 to 60, with stocks runuing very low.

Old Metals.—The market is quiet, with prices rather weaker, except for Tin Plate Scrap, which is $2 a ton higher, being scarce and in active demand. Dealers are paying about the following for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 14½c.
Light and Tinned Copper	per lb. 12½c.
Heavy Brass	per lb. 9 c.
Light Brass	per lb. 7½c.
Lead	per lb. 4 c.
Tea Lead	per lb. 3¼c.
Zinc	per lb. 2¾c.
No. 1 Pewter	per lb. 18½c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	$8.00
Wrought Iron Scrap, per gross ton	$10.50 to 11.00
Heavy Cast Scrap, per gross ton	10.00 to 10.25
Stove Plate Scrap, per gross ton	6.75 to 7.00
Burnt Iron, per gross ton	5.00 to 5.50

THE PIG IRON MARKET.

New York.—As yet the orders from a leading consuming interest in this section have not been placed and the market has been very quiet. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $14.50 to $15; No. 2 Foundry, $14.25 to $14.50; No. 1 Soft, $14.50 to $15; No. 2 Soft, $14.25 to $14.50; No. 3 Foundry, $13.25 to $13.50; No. 4 Foundry, $12.75 to $13.25.

Chicago.—While the total tonnage of transactions dnring the past week was below that of the preceding weeks, conditions prevailing in the trade were of a distinctly encouraging character, the nuumber of transactions being larger and representiug a better feeling amoug the rank and file of the foundry trade. Numerous orders for Fouudry Iron have been received, running from 300 to 500 tons. Foundrymen who, in ordinary course, would have contracted in June or July for the last half of the year, are now entering the market as rapidly as they can make up their miuds that their own bnsiness will be satisfactory. The local foundries are rapidly overcoming labor troubles and this is contributing to the improved tone in the market. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon	14.90 to 15.15
Southern Coke, No. 1	14.90 to 15.15
Southern Coke, No. 2	14.15 to 14.40
Southeru Coke, No. 3	13.65 to 13.90
Southern Coke, No. 1 Soft	14.65 to 14.90
Southern Coke, No. 2 Soft	14.15 to 14.40

Philadelphia.—Business has uot been active during the past week, bnt prices have held quite firmly. Sales have been mostly in small lots. Opinions differ somewhat as to the probable course of the market after the strike is settled, but some good judges are figuring on higher prices during the last quarter of the year than any that have been realized up to this date. Makers of Pig Iron will certainly try to secure some orders for winter delivery and prices will depend a good deal on the way the buyers respond. The range of prices is about as follows for deliveries in Philadelphia or equivalent points, and about 25c. less for the Harrisburg district: No. 1 X Foundry, $15.50 to $16; No. 2 X Foundry, $14.85 to $15.25; No. 2 Plain, $14.25 to $14.75.

Pittsburgh.—There is nothing doing in Bessemer Iron except on occasional small lots. A little Bessemer has been sold luto September, but the amount is small. There is no disposition, however, on the part of the furnaces to reduce the price. Foundry Iron is dull and prices are weak. We quote Bessemer $15.75 to $16, and No. 2 Foundry $13.75 to $14, both f.o.b. Pittsburgh.

Cincinnati.—The general couditions in Pig Iron have not changed materially in the past week. With the close of August the situation shows up as a more than ordinarily active summer. July was one of the best months of the year. August was fair; some agencies report it as even good. The past week was about on an average with the rest of the month. There was more large inquiry than for a short time past, the result of which was rather small owing to the fact that the furnaces are in the main holding for better prices than buyers are willing to recognize. The outlook is a little bit uncertain and hard to judge, both as to actual selling prices and as to the amount of business likely to come within the next week. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$13.50 to $13.75
Southern Coke, No. 2	13.00 to 13.25
Southeru Coke, No. 3	12.50 to 12.75
Southern Coke, No. 4	12.00 to 12.25
Southern Coke, No. 1 Soft	13.50 to 13.75
Southern Coke, No. 2 Soft	13.00 to 13.25
Southern Coke, Gray Forge	12.00 to 12.25
Southern Coke, Mottled	12.00 to 12.25
Ohio Silvery, No. 1	15.50 to 16.00
Ohio Silvery, No. 2	14.50 to 15.00
Lake Superior Coke, No. 1	14.50 to 15.00
Lake Superior Coke, No. 2	14.00 to 14.50
Lake Superior Coke, No. 3	13.50 to 14.00

CHICAGO REPORT.

Scrap Iron and Steel.—While business is rather quiet, a few items are in some demand, such as Gas Pipe and Horseshoes, Boriugs and Turnings. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Pet net ton.
Country Wrought Scrap	$10.50 to $11.00
Machiuery Cast	10.00 to ....
Malleable Cast	10.00 to 11.00
Stove Plate (free from burnt)	7.00 to 7.50
Burnt Iron and Grate Bars	5.50 to 6.00
Sheet Iron and Hoops	6.00 to 7.00
Plow Steel	9.00 to 10.00
Breaking Stock	9.00 to ....
No. 2, such as Shovels, Hoes, &c	.... to 7.00
Old Boilers—whole (Iron)	6.00 to 7.00
Old Boilers (Iron) cut in single Sheets and Rings	9.50 to 10.00
Old Gas Pipe and Boiler Tubes	10.50 to 11.00
Cast Borings	4.00 to 4.25
Turnings	9.00 to 9.50
Horseshoes	11.00 to 12.00

Old Metals.—Business is somewhat better, but prices are a shade easier on Copper and Brass. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	14¾c.
Copper Bottoms	13¼c.
Copper Clips	14¼c.
Red Brass	13⅜c.
Yellow Brass	9½c.
Red Brass Borings	11½c.
Yellow Brass Borings	8¾c.
Light Brass	7¾c.
Pipe Lead	4 c.
Tea Lead	3½c.
Zinc	2⅜c.
Pewter, No. 1	19 c.
Pewter, No. 2	10 c.

Old Rubber.—Trade is steady. Dealers' buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$23.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7¾c.
Rubber Car Springs	....	4¾c.
Inside Bicycle Tubing	....	21 c.
Outside Tubing	....	7¼c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—The demand has been fair for the past week, running a little better than earlier in the month. The discount of 10c. per ton is not allowed after August 31. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis.	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo.	8.25	8.50

THE HARDWARE TRADE.

The directions in which the effects of the steel strike are being felt by the trade are becoming more numerous. The difficulty experienced in getting certain lines of goods, owing to the scarcity of material, is extending to other lines. Delays incident to these conditions are annoying to both jobbers and their customers, entailing a large amount of correspondence and many explanations. A long continuance of present conditions would, of course, intensify the situation. The active demand for all lines of goods continues under the somewhat adverse circumstances, and is stimulated by them. The outlook for a large fall trade is good, if sufficient goods can be obtained to supply the demaud.

NOTES ON PRICES.

Wrought Iron Pipe.—As predicted in last week's report, the price of Wrought Iron Pipe has undergone a most radical chauge. The new and advanced prices were announced and put into effect on Friday, August 23. The direct cause of the advance is said to be the scarcity of mauy sizes and the total disappearance of several sizes from the market, owing, of course, to the labor troubles at the mills. The scarcity of ¾-inch Pipe has caused that size to be reclassed and it is now sold under the low discount applying to the smaller sizes. The reclassification of sizes is as follows: ⅛ to ¾ inch, inclusive; 1 to 12 inches, inclusive. Most of the independent mills are now practically at a standstill owing to the fact that they caunot procure any more Skelp from which to make the Pipe. These mills are dependent on the United States Steel Corporation to supply them with Skelp. It will be seen that while the indepeudents aro having no trouble with their own labor, they are still affected by the labor troubles of the leading concern and aro consequently able to do little or nothing to relieve the stringency in the Pipe market. It is said, by a person who is in a positlon to know exactly what is going on, that the National Tube Company and each and every Independent mill in the Pipe business have enough orders now ou their books to keep their plants busy until March 1, 1902. This being the case, there seems to be little prospect of any decline in prices untll after that time. Prices are quite liable to undergo another advauce in the local market within a short time.

Plumbers' Brass Work.—The demand for this line of goods has continued brisk during the past week. The demand is almost entirely of a retail character. Prices have not undergone any change, and until after the next meeting of the Brass Manufacturers' Association at Detroit on September 4 there probably will be very little change in market conditions. It is understood that no further advances will be announced at the next meeting owlng to the fact that the last advance made on July 29 has had a directly opposite effect on the trade to what was expected. Instead of inciting buyers to place their orders, it has had the effect of keeping them out of the market with their heavy orders until there is some assurance that prices are likely to be kept where they are. The Detroit meeting, it is expected, will settle this point.

Furnace Pipe and Fittings.—The scarcity of Tin Plate and the great advance in its price have the past week compelled the manufacturers of Furnace Pipe and Fittings to make another advance in their prices, which are now 33 1-3 per cent. higher than one month ago. It is claimed that this advance does not entirely cover the higher cost of Tin Plate. In fact, it is absolutely impossible to get some sizes of Tin Plate at any price, as the stocks have been completely exhausted in the hands of both manufacturers and jobbers. It is impossible to say when the Tin Plate factories will again be in operation to a sufficient extent to adequately meet the necessities of the Tin Plate trade. The entire country is now manufacturing so little that it is merely an aggravation. If the strike continues much longer most manufacturers of such specialties as Furnace Pipe aud Fittings will run out of stock completely.

Sheet Metal Ware.—Stocks of Tinware, Enameled Ware and Galvanized goods are running low and assortments are becoming more broken every day. Great inconvenience will be caused from this time forward unless the strike is settled or the Sheet and Tin Plate manufacturers succeed in starting more of their mills. Prices are very firm all along the list of Sheet Metal Goods.

Coil Chain.—Coil Chain has been advanced in price by the Standard Chain Company. Present prices for cask lots, f.o.b. Pittsburgh, are as follows:

3-16	¼	5-16	⅜	7-16
$7.75	5.80	4.85	4.00	3.85
½	9-16	⅝	11-16 to 1	
$3.75	3.55	3.55	3.50	

An advance of 25 cents is added in less than cask lots.

Wire Nails.—Fair quantities of Wire Nails are being taken by the territory tributary to New York. There is a disposition on the part of some buyers to order in larger quantities thau for some time. Small lots of Wire Nails from store are quoted at $2.60 per keg.

Cut Nails.—The market continues without change, the trade taking about the usual proportion of Cut Nails. Small lots from store rule at $2.18 to $2.25 per keg.

Wire.—A continued heavy demand for Plain Wire is noted and the tone of the market is firm. Some of the mills are still behind in deliveries. Plain Wire, in a retail way, is quoted at 2.60 cents, and Galvanized at 3 cents per pound.

Window Glass.—The prospect of a large fall demand for Window Glass is not improved by the steel strike. Quotations remain unchanged.

White Lead.—The recent reductions in the price of Linseed Oil have unsettled the White Lead market to some extent, as grinders are not inclined to make contracts for supplies until the Oil market becomes settled. Some improvement in the demand for White Lead in Oil is noted, although confined for the most part to small lots. Quotations are unchanged at 7 to 7¼ cents per pouud for moderate sized lots from store.

Linseed Oil.—Values of Linseed Oil have again declined sharply during the week. On August 27 a further cut in price of 7 cents per gallon was announced, makiug the total decline since July 24 cents per gallon. City Raw, in small lots, is now quoted at 59 to 60 cents per gallon, Boiled Oil being 2 cents advance on Raw. Competition by interests outside the combine and the falling off in the cost of Flax Seed are causes to which the reduction in the price of Oil is attributed. The impression prevails in the trade that Oil is likely to go still lower. According to present reports the Northwestern crop of Flax Seed promises to be large.

Spirits Turpentine.—The Turpeutine market during the week has shown but little variation in prices. As a rule the demand has been light and for small lots. Retail quotations are unchanged at 37½ to 38 cents per gallon.

A British consular report from Sweden is authority for the statement that the German, Swiss, Austrian, Swedish and Norwegian manufacturers of calcium carbide have made an agreement, with the object of checking the overproduction of carbide, which is uow threatening the industry on the European Continent. It is said that nearly every maker of importance has signed the agreement, and has bound himself to stop all production for the present until stocks are reduced. The united production has been about 50,000 tons yearly,

while the consumption up to the present has only reached 12,500 tons. In France, Italy and other countries, where the above mentioned agreement has not been signed, the consumption of calcium carbide is less than the production, so that under the circumstances it has been impossible to maintain prices.

A Beautiful Electrical Effect.

The Baltimore *American* in a recent issue describes a most beautiful electrical effect which has been produced in the Roman Catholic cathedral in that city by means of a lighting system designed and executed by I. P. Frink of New York City. It is the illumination of a statue of Our Lady of Lourdes, which has recently been placed in the church. As is well known, especially among Roman Catholics, Our Lady of Lourdes was an apparition that appeared before the child, Bernadette Soubirons, some 40 years ago on a rock at Lourdes in France. Since that time Lourdes has become famous for a fountain, the water of which is said to possess most wonderful healing qualities, which spring was revealed after the child had dug in the sand at her feet at the command of the apparition. Two magnificent churches have been built near the fountain, which is visited by many thousands annually, and many miraculous cures are attributed to the same. The statue of Our Lady of Lourdes stands at the left of the altar in the Baltimore Cathedral and is of Italian marble. Adorning the head is a magnificently designed brass crown studded with tiny incandescent bulbs, and around the feet of the statue are roses made of Austrian porcelain, the leaves being of brass and remarkably natural in appearance. Inside each rose is a small electric bulb, the soft rays of which contrast beautifully with the brilliant illumination of the circle about the head of the statue. Each group of lights about the statue can be used separately. It is said to be one of the most striking electrical displays of the kind ever made.

Dr. George F. Becker of the United States Geological Survey, in a report on the minerals of the Philippines, says that the copper deposits in the Province of Lepanto, near Mount Data, have been worked by the Igorrotes since before the discovery of the Philippine Archipelago by the Spaniards. These barbarians, who live in squalor, seem to have developed industrially to a surprisingly high point. The skill they exhibit in the extraction and working of the metal is described as remarkable. They turn out copper kettles no less than 3½ feet in diameter, and they also make numerous kinds of implements and ornaments out of the same metal. From 1840 to 1855 they exported some 20 tons of copper utensils and other manufactures.

The variety of serviceable articles made from mica by the Ohio Mica Company, Canton, Ohio, is illustrated and described in a tasteful pamphlet issued by that concern. The publication, covering some 12 pages, shows various metal strip chimneys and other forms of mica chimneys, likewise canopies for lamps and gas jets in various styles. A smaller pamphlet is the Standard Price-List of Stove and Electrical Micas. The Ohio Mica Company are miners, millers, manufacturers and importers of mica, and beside their warehouse and general office at Canton, Ohio, have warehouses at Spruce Pine, N. C., and Ottawa, Canada. Among other goods they make a specialty of cut and uncut sheet mica, mica washers, powdered mica, mica chimneys, canopies, &c.

The United States Consul at Rouen, France, reports that a novel idea in the fire extinguishing service has been introduced by the head of the fire department in that city. Inasmuch as the city is traversed everywhere by electric trolley wires, it is proposed to provide pumps driven by dynamos, to take currents by means of a trolley hooked to the street car wires at the nearest point to the fire.

The annual report of the Interstate Commerce Commission for the fiscal year ended June 30, 1900, just completed, shows the total mileage of railways in the United States at that date to have been 193,345, an increase of 4051 miles for the year. In 1890 the total railway mileage of the country was 163,507, and the gain in the following ten years was, therefore, 29,748 miles.

The President's proclamation in regard to the St. Louis International Exposition, just issued, declares that the exposition shall be opened not later than May 1, 1903, and that it shall be closed not later than December 1 of that year.

CONTENTS.

	Page.
Editorials—	
Freight Charges and Back Orders	39
Some Kinds of Union Victories	39
Managers of Men	39
Careful Buying for Plumbers and Metal Workers	40
The Canadian Stove and Heating Trade	42
The Charm Crawford Range. Illustrated	42
Gilt Edge Furnace Requires a Larger Factory	42
The Monogram Gas Stove. Illustrated	43
The Irving Ranges	43
Ordering Stove and Range Repairs	43
Ornamental Andirons. Illustrated	43
Odd Plates	43
The Best Vapor Lamps	44
Hardware Store Business Methods	44
The Retailer: His Rights and His Power	45
Every-Day Dimensions for Plumbers	46
The Imperial Wall Radiator Illustrated	46
The Morgan Damper Regulator. Illustrated	47
Royal Steam and Hot Water Heaters	47
The J. H. McLain Company's Heating Goods	47
The Situation of Enameled Bathtubs	48
The Perfect Boiler	48
Heating and Plumbing Notes	48
New Firms and Changes	50
Trade Conditions in Southern New England	50
New York Master Plumbers' Outing	51
Stove and Hardware Dealers	52
Trade Notes	52
Keeping Track of Shop Jobs. Illustrated	53
The Steel Strike	54
Lloyd Booth	54
New Sheet Mills at Sharon, Pa	54
Flashings	54
The Letter Box—	
Trouble with Drying Oven. Illustrated	55
Length of Skylight Bars	55
Constructing a Copper Spire. Illustrated	56
Cleaning Zinc	56
Making a Cellar Water Tight	56
Trouble with Steam Pump	56
Who Makes the Nash Ventilator?	56
Trade Report—	
Market Summary	57
Metal Market	57
The Pig Iron Market	58
Chicago Report	58
The Hardware Trade	59
Notes on Prices	59
A Beautiful Electrical Effect	60
Metal and Miscellaneous Prices	61
Labor Exchange—	
Help and Situations Wanted	65

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED AUGUST 30, 1901

The following New York quotations are for small lots:

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots.....₩ lb, 37¢
100-lb lots.....₩ lb, 35¢
Aluminum Sheet, B. & S. gauge.
In lots of 50 lbs or more.

And including	Wider than	6-in ₩ lb	14-in ₩ lb.	24-in. ₩ lb.	30-in. ₩ lb.
Nos. 13 to 19		$0.42	$0.44	$0.47	
" 20		.44	.46	.49	
" 21 to 23		.46	.48	.51	
" 24		.46	.50	.53	
" 25		.47	.51	.54	
" 26		.47	.54	.59	
" 27		.48	.57	.62	
" 28		.48	.57	.64	
" 29		.49	.60	.69	
" 30		.50	.64	.77	

Note.—Lots of less than 50 lbs 5¢ ₩ lb extra.

Antimony—

Cookson.....₩ lb, 10½@11¢
Hallett's .....₩ lb, 8½@9¼¢
U. S.....₩ lb, 8½@9 ¢

Brass—Planished .....net

Roll and Sheet.....15@20% off

Brass and Copper Tubes

Brazed Brass Tubing—

Brown & Sharpe's Gauge the Standard.

List Feb. 26, 1896.

Plain Round Tube.	Per lb.	
¾-in. up to 2-in.	$0.35	30@35% off
⅝-in. up to ¾-in.	.36	
½-in. up to ⅝-in.	.38	
⅜-in. up to ½ in.	.41	
5-16-in. up to ⅜-in.	.48	
¼-in. up to 5-16-in.	.65	
3-16-in. up to ¼-in.	1.00	
⅛-in. up to 3-16-in.	1.50	
Smaller than ⅛-in.	Special	
3-in. and larger	Special	
2-in. to 3-in. to No. 19, inclusive.	.38	

Copper & Bronze Tubing—

3¢ ₩ lb more than Brass.

Conductors—

Corrugated. *Round or Square.*—

Galvanized ½ or more. N'st'd.....70&5%
" Not Nested.....70&2½%
" Plain Round, ½ or more.
Nested .....70&5%
Galvanized, Plain Round, Not Nested. 70&2½%

Spiral Riveted.

Galvanized 40%
See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—See *Strainers, Conductor.*

Copper—

Lake Ingot..... ...17¼@17½¢
Casting..... .....16¼@17 ¢
Sheet and Bolt.....21¢ ₩ lb basis
Cold Rolled Sheets.....22¢ ₩ lb basis
Cold Rolled and Polished Sheets ... . 23¢ basis
Planished Sheets.....24¢ basis
Bottoms, Pits and Flats.....₩ lb 25¢ basis

Eaves Troughs—

List Feb. 1, 1895.

Lap or Slip Joint, Galvanized, in crates 75&10%

Eave Trough Mitres—

Lap or Slip Joint.....list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin.....30%
Galvanized.....30%
Perfect " Elbows.....40%

Stove Pipe—

Four-Piece.

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz
No. 2.	.65	.70	.75	.80	.85 "
No 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Corrugated

Round or Square.

Galvanized 60%

Gasoline—See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	₩ lb 3.70	3.75¢
Nos. 18 to 21	₩ lb. 3.80	3.85¢
Nos. 22 to 24	₩ lb. 3 90	3.95¢
Nos. 25 and 26	₩ lb, 4.00	4.05¢
No. 27	₩ lb, 4 10	4.15¢
No. 28	₩ lb, 4.20	4.25¢

Russia, Planished, &c.

Genuine Russia, according to assortment.....₩ lb 10½¢
Do. Stained.....6¢@10¢
Patent Planished. ₩ lb A, 11¢; B, 10¢ net

Galvanized.

Nos. 10 to 16	₩ lb, 12¢	60% off.
Nos. 17 to 21	₩ lb, 13¢	
Nos. 22 to 24	₩ lb 14¢	
Nos. 25 to 26	₩ lb, 15¢	
No. 27	₩ lb, 16¢	
No. 28	₩ lb, 17¢	
No. 29	₩ lb, 19¢	
No. 30	₩ lb, 21¢	

36 in. 1¢ ₩ lb higher

Kerosene—See *Petroleum Products*

Lead—

American Pig.....4.60@4.62½¢
Bar.....5⅛@5¼.
Pipe.....6½¢.....2½ off
Tin Lined Pipe.....12½¢.....20% off
Block Tin Pipe .....40¢.....20% off
Sheet Lead, full rolls... 7¼¢ ....20% off
Sheet Lead, cut.....7¾¢.....20% off
Old Lead in exchange, 4½¢ ₩ lb.

Mitres, Eave Trough—See *Eave Trough Mitres.*

Nickel—

Per lb.....60@65¢

Paints, Oils, &c.—

Lead, White, Atlantic and Jewett's. 7¼¢
Lead. Amn. White, in oil..... 7@7¼¢
Lead. Red. bbls. and ⅛ bbls..... 7@7¼¢
Lead, Red, kegs..... 7@7¼¢
Linseed Oil:
Raw, ₩ gal..... ....59@60¢
Boiled..... ....61@62¢

Spirits Turpentine:
In bbls.....37½@38 ¢

Putty:
In barrels and ⅛ bbls..... .....2½
In tin cans..... .....3½
In bladders..... .....2¾

Palm Oil. 1500 lb casks.

Fancy Lagos..... .....₩ lb 6 ¢
Clarified.....₩ lb 5¾¢
Acera .....₩ lb 5½¢
Half Jack .....₩ lb 5 4¢

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline.....₩ gal. 12½@13¢
Kerosene..... ₩ gal. 13@13½¢

Pipe, Drain..... ....40%

Pipe, Spiral—See *Conductors*

Registers—

List Feb. 1, 1899.

Black Japanned..... 50&10%
White Japanned.....40&10%
Nickel Plated.....50&10%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze..... .....40%
Electroplated in Brass, Bronze or Copper..... .....40%
White Porcelain 20%
Solid Brass and Bronze Metal.....20%

Roofing Material—

Heavy Single Ply Tar Felt,..... ₩ ton $30 00
2 Ply Roofing Felt....₩ roll, 108 sq. ft. 65¢
3 Ply Roofing Felt....₩ roll, 108 sq. ft. 85¢
Roofing Pitch ₩ bbl.....$3 38

Rosin

(Barrels of 280 lb. Barrels weigh actually about 400 lb).
Common and Good—Strained.
Rosin, C. & D.....₩ bbl. $1.40 @$1.42
Rosin, E. & F.....₩ bbl. 1.55 @ 1.65
Rosin, G. & H.....₩ bbl. 1.70 @ 1.75
Rosin, I. & K.....₩ bbl. 1.80 @ 2.15
Rosin, M. & N.....₩ bbl. 2.60 @ 3.15

Seamless Brass Tubes—

Net List, February 6, 1899.

Shoes and Elbows—See *Elbows and Shoes.*

Slate Roofing—

According to size, f. o. b. cars, Quarry Station.

Pennsylvania:
Best Bangor, ₩ sqr. .....$3.25@$4.50
No 1 Bangor ribbon, ₩ sq 3.00@ 3.50
Pen Argyle, ₩ sqr. ..... 3.00@ 3.75
Peach Bottom, ₩ sqr..... 4.85@ 5.60
No. 1 Boys, ₩ sqr..... 3.35@ 3.55
No 1 Chapman Keystone ₩ sqr..... .. .. 3.25@ 4.25
Vermont:
Sea Green, ₩ sqr.....$2.00@$3.00
Purple, ₩ sqr .... 3.75@ 4.25
Unfading Green, ₩ sqr... 3.25@ 4.50
Red, ₩ sqr ..... 6.50@11.00
Maine:
Brownville, Unfading Black:
No. 1 quality..... .....$5.25@7.50
No. 2 quality..... ..$4.25@6.00

Solder—

½&¼ guaranteed.....19@19½¢
No. 1.....15 @17½¢
Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Concentrated Soldering Flux.
f. o. b. New York.
In barrels. ₩ lb .....4¢
Smaller quantities. ₩ lb.....5¢

Eureka Soldering Flux—Triple Strength
In barrels, ₩ lb ..... 3 ¢
Smaller quantities, ₩ lb .....3½¢

Eureka Soldering Flux—Extra Concentrated
In barrels, ₩ lb..... .....4½¢
Smaller quantities, ₩ lb .....5 ¢

Eureka Soldering Flux—Crystal.
In 100-lb cases, ₩ lb.....7¢

Gedney's Soldering Fluid.
In carboys or barrels, ₩ lb.....2¢
$1.50 for carboy or barrel; money refunded when returned.

Lennox Soldering Fluid.
In barrels, ₩ lb.....2¢
In carboys. ₩ lb.....3¢

Perfection Soldering Flux.
No charge for package.
Bbls. about 500 lb, ₩ lb.....3¢
½ bbls., about 300 lb, ₩ lb.....3½¢
Kegs, about 110 lb, ₩ lb..... .3 ¾¢
Kegs about 55 lb, ₩ lb..... .....4¢

Yager's Soldering Salts.
1 lb bottles, each.....60%
5 lb bottles, ₩ lb.....40%

Soldering Coppers—

Per lb.....22@24¢

Spelter—

Western Spelter.. .....4.45@4½¢

Spiral Pipe—See *Conductors.*

Stove Pipe Elbows—See *Elbows, Stove Pipe.*

Stove Trucks—See *Trucks, Stove*

Strainers, Conductor—

Galvanized..... .....50%

Tin Pigs and Bars—

Banca, pigs. ₩ lb..... .....27½@27½¢
Straits, pigs, ₩ lb.....27 @27¼¢
Straits, in bars, ₩ lb..... .....27¾@28 ¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:
IC, 14 x 20..... ....$8 25
IX, 14 x 20.... . ..... 9.75
IXX, 14 x 20.....11.00
IXXX, 14 x 20.....12.25
IXXXX, 14 x 20.....13.50

Melyn Grade:
IC, 14 x 20..... ..... 7.75
IX, 14 x 20..... ..... 9.25
IXX, 14 x 20..... .....10.50
IXXX, 14 x 20..... .....11.75
IXXXX 14 x 20.... .....13.00

Allaway Grade:
IC, 14 x 20..... .... 7.25
IX, 14 x 20 .... 8.35
IXX, 14 x 20..... .... 9 45
IXXX, 14 x 20..... . 10.55
IXXXX, 14 x 20. .....11.65

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight } IC, 14 x 20.....$7.15@7.25
" " IX, 14 x 20.....$8.00@8.25

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:
100 lb.....15¢
95 lb..... .....20¢
90 lb.....25¢
85 lb..... .....30¢

Terne Plates—

N. B.—The following prices are for IC, 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 lb coating and $2.50 to $3 00 advance for 15 lb and upward.

About 40 lb coating..... $18.50@19.00
About 30 lb coating..... 17.75@18.25
About 20 lb coating..... 15.75@16.25
About 15 lb coating ..... 13.75@14.25
About 8 lb coating..... .....@13.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)..... $16.00
IXX, 14 x 28..(112 sheets)..... 17 00
IXX, 14 x 31..(112 sheets)..... 18.50

Troughs Eave—See *Eave Trough*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00
Steel Lock Frame, per doz. 18.00
Daisy Improved pattern, ₩ doz... 18.00

Tubing—

Tin .....50% | Galvanized.....50%
Fittings for do.....40%

Zinc—

600 lb casks ₩ lb..... .....6¾¢
Per lb.....7¾¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Fittings—

List of Oct 7, 1899

Cast Iron Fittings, Black and Galvanized, Standard sizes .....60@60&10
Cast Iron Bushings and Plugs....65@65 &5%
Cast Iron Flanges.....65@66⅔%
Malleable Iron Fittings.....45@50%
" " Bushings.....65&6 &5%
" " Unions.....65@66⅔%
Wrought " Nipples.....65@66⅔%
" " Couplings.....65@66⅔%
" " Long Screws.....65@65⅔%

Cast Iron Soil Pipe—

List Feb. 25, 1901.
2 to 8 inch inclusive.
Standard..... 55&10@60%
Extra Heavy.....65@65&10%
All Fittings.....70&5@70&10%

Merchant Wrought Iron Pipe—

List Feb. 15, 1900
Random Lengths.

	Black.	Galv
⅛ to ¾ inch.	35%	20%
1 to 12 inch.	45%	30%

Extra Strong Pipe—

Random Lengths

	Black	Galv.
⅛ to ⅛ in. } ¼ to 2 in. } 2½ to 8 in. }	25%	10%

Valves Cocks, &c.—

Iron Body Valves.....65&5@70%
Air Cocks and Radiator Air Cocks.... 70@70&5%
Soldering Unions.....70@70&5%
" Nipples .....70@70&5%
Brass Unions (Rough and Finished).. 65&5@70%
Jenkins Bros.':
Iron Body Valves, except Gate Valves 55%
All Iron Valves, except Gate Valves.. 40%
Iron Body Gate Valves. 50%
All Iron Gate Valves.... .....35%
Iron Cocks, all Iron.....60&10%
" " with Brass Plugs.....60%
Brass Globe, Angle and Cross Valves.. 65@65&10%
" and Angle Valves, hose outlet..... 65@65&10%
Brass Garden Hose Valves....65@65&10%
" Horizontal, Vertical and Angle Check Valves.....65@65&10%
Brass Safety Valves 55%
" " " Low Pressure ...55%
Brass Radiator Valves .....05@65&10%
" " Jenkins 55%
Brass Jenkins' Globe, Angle, Cross and Corner Valves. 55%
Brass Jenkins' Safety and Check Valves..... 40%
Brass Jenkins' Gate Valves..... 50%
Brass Steam Cocks .....65@65&10%
" Gas Meter and Union Meter Cocks.....05@65&10%
Brass Fittings, Rough.....05@65&5%
" " Finished.....65@ 5&5%
" Bushings . ...65@65&10%

Plumbers' Brass Work—

List of December 7, 1896.

Ground Key Work:
Rough Bibs and Stops.....65@65&5%
Finished Bibs..... .. ....60@60&5%
Rough Stop and Stop and Waste Cocks.....65&5@70%
Rough Stop and Stop and Waste Cocks, Patented..... .....60@60&5%
Compression Bibs. .....05@05&5%
" " Flange I.....65&10%
Compression Bath Cocks and Double Bath Cocks..... .....65@65&5%
Compression Basin Cocks .....65@65&5%
Fuller Bibs.....70@70&5%
Fuller Basin Cocks, Nos. 1 to 4.70@70&10%
Fuller Bath Cocks, No. 4½.....$2 25 net
Chain Stays.....60@60&5%
Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face....₩ set	$1.00	$1.10
Ground Face. ₩ set	$1.05	$1.15

Basin Plugs.....60@60&10%
Sink or Bath and Wash Tray Plugs.... 00@60&10%
Basin Clamps .....70@70&10%

Bath Tubs—

Cast Iron Enameled Bath Tubs.
List of March 26 1900.
Regular Patterns. Guaranteed. Complete Line ....30&10@40%
All High Grade and Special Pattern (except as below).....20%
"Diana" and "Brighton."..... 20%
Non-guaranteed Brands, complete line 40%
Steel Clad Copper Lined Bath Tubs, list of Feb. 1, 1899.....45@50%
Soil Pipe Porcelain Bath Tubs.....20%
Solid Copper, list of Feb. 1, 1899.....20%

Boilers—

Standard Boilers:
30 gal.....65@ 65&10%
35 and 40 gal.....65@6 &5%
Other sizes up to 52 gal....50&10@60%
52 gal. and above.....50&10@60%
Extra Heavy Boilers:
18 to 52 gal ..... 50&10@60%
53 gal. and above..... ....40&10@45%

Sinks—

	Cast Iron—Black	Galv.
Sinks, Square, Half Round and Corner	50&5%	50&10@00%
Sink Legs. .. . .50&5%		50&10@60%
Sink Backs ..... .50&5%		50&10@00%

Wrought Steel—

New Era, Galv'd and Enameled. ..70&5%
New Era, Painted.....50&10%
L. & G.....50%

Miscellaneous—

Earthenware, List of Aug. 15, 1901.... Basins, Urinals and Hooners..... 40%
Closet Bowls, Sundries, Washouts and Pedestals.....40%
Drawn Lead Traps, List of June 5, 1901.....40@40&10%

ALPHABETICAL LIST OF ADVERTISERS.

Adler, H. Co..... 14
American Hardware Mfg.Co. 76
American Sheet Steel Co....1&72
American Tin Plate Co. 72
Arcade Mfg. Co..... 84
Armstrong Mfg. Co..... 86
Asheville Mica Co..... 84
Asphalt Ready Roofing Co .. 73
Atlas Radiator Pedestal Co... 25
Auld & Conger..... 68
Ayling Bros..... 31
Barstow Stove Co..... 80
Beckwith, P. D., Est. of..... 2
Berger Bros. Co.....30&69
Berger, L. D..... 76
Berger Mfg. Co 74
Bergstrom Bros. & Co..... 20
Bertsch & Co..... 78
Bliss, E. W. Co..... 78
Blodgett, G. S. Co..... 24
Boynton Furnace Co..... 6
Brand Stove Co..... 23
Bray, J. & Co..... 68
Bridgeport Crucible Co..... 88
Bridgeport Stove Works..... 27
Brien Heater Co..... 25
Brobard Co..... 30
Brooklyn Metal Ceiling Co.... 70
Bruce & Cook.....78&80
Brucker, M..... 81
Burton, W. J. & Co..... 75
Butler Steel Furnace Co..... 27
Callahan, Geo. & Co..... 69
Canton Steel Roofing Co..... 27
Carroll, J. B..... 85
Castle, Wilmot & Co..... 26
Champion Steel Range Co.... 24
Cheney, S. & Son 1
Cincinnati Stamping Co....25&76
Clark, Henry N. Co..... 30
Clark Novelty Co..... 67
Clark, Quien & Morse..... 71
Clason Arch. Metal Works... 68
Clayton & Lambert Mfg. Co.. 37
Clough, R. M..... 79
Colebrook, W. H. Sons & Co. 32
Colwell Lead Co..... 86
Connors, Wm. Paint Mfg. Co. 70
Cooney & Geiger..... 69
Co-operative Foundry Co..12&18
Cope, Geo. W 84
Cortright Metal Roofing Co... 75
Crosby Steam Gage & Valve Co..... 1
Crown Ventilator Co..... 69
Curtis & Curtis Co..... 86
Dangler Stove & Mfg. Co..... 24
Dean Boiler Co..... 27
Detroit Stove Works..... 15
Dighton Furnace Co.....1&21
Dixon, Jos. Crucible Co..... 80
Donaldson, O. G. & D. H..... 81
Double Truss Cornice Brake Co 76
Dowman Mfg. Co..... 69
Drake, W. H..... 22
Drouve, G. Co..... 75
Edwards, J. H..... 87
Eller, J. H. & Co..... 75
Energy Elevator Co..... . .. 36
Enterprise Stove Co..... 14
Esterbrook's, R. Sons..... 86
Excelsior Stove Mfg. Co.. 15
Farnan Brass Works..... 87
Feun, Geo. E..... 69
Floyd, Wells & Co..... 23
Follansbee Bros. Co..... 1
Forest City F'dry & Mfg. Co.. 22
Foster, F. W. Mfg Co..... 37
Friedley & Vosbardt..... 74
Frink, I. P..... 80
Front Rank Steel Furnace Co 15
Fuller & Warren Co..... 1
Fulmer, J. H..... 75
Galesburg Cornice Works.... 76
Galt, John & Sons..... 68
Galusha Stove Co..... 6
Garry Steel & Iron Co..... 73
Garvin Machine Co 76
Genuine Bangor Slate Co..... 68
Globe Ventilator Co..... 69
Gobeille Pattern Co..... 30
Gordon, W. J..... 79
Gorton & Lidgerwood Co..... 1
Greene, W. F., Est. of..... 32
Gummey, McFarland & Co... 71
Gurney & Co..... 15
Gurney Heater Mfg. Co. 23
Hamlin, G. R..... 68
Harrington & King Perforating Co..... 62
Hart & Crouse Co..... 20
Hessler, H. E. Co..... 33
Hoffman, Geo. W..... 31
Howes, S. M. Co.....18, 30&31
Howson & Howson 67
Hungerford, U. T., Brass & Copper Co..... 79
Independent Register Co..... 27
International Correspondence Schools..... 66
International Heater Co..... 8
Janney, Steinmetz & Co..... 68
Jenkins Bros..... 1
Johnson, E. J. & Co..... 68
Keeley Stove Co..... 14
Keene, Geo. C. & Co 79
Kelsey Furnace Co..... 98
Kemp, C. M. Mfg. Co..... 35
Kewanee Boiler Co..... 21
Kieley & Mueller..... 1
Koven, L. O. & Bro..... 37
Lamb & Ritchie..... 37
Landers, Frary & Clark..... 85
Lawrence-Letts Elbow Co.... 32
Lennox Machine Co..... 27
Livermore, H. F..... 36
McClure & Co..... 80
McLain, J. H. Co..... 28
McLeod & Henry Co..... 1
McSherry, Chas..... 77
Magee Furnace Co .....1&19
Marcy Stove Repair Co..... 33
Marlin & Co..... 74
Marston, I. G. & Co..... 37
Mellink Mfg. Co..... 85
Meurer Bros. Co..... 71
Meyer, F. & Bro. Co 23
Michigan Stove Co.....4&5
Millar, Chas. & Son Co..... 80
Miner & Peck Mfg. Co 87
Montross Metal Shingle Co.... 73
Morgan & Co..... 84
Mueller, L. J. F'ce Co..... 16
Munsell, E. & Co..... 84
National Enameling & Stamping Co..... 83
National Pipe Bending Co.... 22
New Haven Novelty Machine Co..... 87
Newton, Wm. M..... 1
New York Iron Roofing & Corrugating Co..... 71
New York Trade School..... 66
Niagara Machine & Tool Wks. 77
Noyes & Nutter Mfg. Co..... 22
O'Halloron & Jacobs..... 68
Ohio Mica Co..... 84
Ohl, Geo. A. & Co..... 78
Osborn, J. M. & L. A 78
Ostrander, W. R. & Co..... 79
Palermo Mica Co..... 34
Peck, Stow & Wilcox Co..... 77
Perfection Furnace Pipe Co.. 29
Perkins, J. L. & Co..... 83
Phila. Machine Tool Co..... 77
Pierce, Butler & Pierce Mfg. Co..... 25
Pittsburgh Stove & Range Co.10
Pocock, Oliver..... 77
Portsmouth Stove & Range Co. 8
Preshrey Stove Lining Co..... 83
Prizer-Painter Stove & Heater Co..... 19
Reeves Mfg. Co..... 70
Resor, Wm. & Co..... 10
Rhodes, L. E. Co..... 87
Richmond Stove Co..... 27
Ringen Stove Co..... 7
Robinson, J. M. & Co..... 79
Rochester Radiator Co..... 26
Rutland Fire Clay Co..... 32
Sackman, F. A..... 67
Safety Furnace Pipe Co..... 26
Salem Nail Co..... 69
Sanborn, John..... 73
Saunders', D. Sons..... 86
Schaffer, John P..... 28
Schill Bros. Co..... 14
Schratwiesers Metal Lath Works..... 73
Schulte, John A. & Co..... 8
Schwab, R. J. & Sons Co..... 21
Schwerdtle Stamp Co..... 68
Seavey Mfg. Co..... 25
Sheppard, Isaac A. & Co..... 1
Sill Stove Works..... 11
Silver & Co..... 67
Smith, H. B. Co..... 17
Smith & Anthony Co..... 80
Smith & Thayer Co 26
Smith-Warren Co..... 70
Special Notices..... 66
Sperry, D. R. & Co..... 67
Stamford Foundry Co 25
Standard Lighting Co..... 9
Stanton Heater Co..... 20
Stiles & Parker Press Co..... 73
Stocking, E. B..... 66
Stolz, Frank D..... 22
Stuber & Kuck..... 80
Taylor Co., N. & G..... 80
Taylor & Boggis Fdry. Co.... 30
Tinnerman Steel Range Co... 27
Townley, H. P..... 66
Trimont Mfg. Co..... 86
Troy Nickel Works..... 33
Tubular Heating & Ventilating Co..... 18
Tucker & Dorsey Mfg. Co.... 84
Union Mfg. & Specialty Co... 78
Union Stove Repair Co..... 34
Valentine, M. D. & Bro. Co... 83
Vance Boiler Works..... 22
Vanderman Plumbing & Heating Co..... 37
Vedder Pattern Works..... 84
Vogel, William & Bros 67
Vulcan Metal Refining Co.... 66
Vulcan Western Co..... 66
Walker & Pratt Mfg. Co..... 9
Washburne, E. G. & Co.....69&76
Watson, Jas. H. Est..... 76
Wayne, Anthony Mfg Co.... 67
Weir Stove Co..... 80
Weiss, H. & Co..... 79
Wheeler, W. A..... 77
Wireton Heating Co..... 28
Wister, L. & R. & Co 80
Wolff, L. Mfg. Co..... 86
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Young, Jos. H..... 84
Zero Valve & Brass Mfg. Co.. 85

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Garvin Machine Co., 257 Spring Street, New York.
Keene, Geo. C. & Co., Cincinnati, O.

SEE ALPHABETICAL INDEX, PAGE 62.

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Drouve, G. Co., Bridgeport, Conn.

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Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

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Clason Arch. Metal Works, Providence, R. I.
Palmer, J. H., Nazareth, Pa.

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Follansbee Bros. Co., Pittsburgh, Pa.
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McClure & Co., Pittsburgh, Pa.
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Ostrander, W. R. & Co., 204 Fulton St., N. Y.

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Valentine, M. D. & Bro. Co., Woodbridge, N. J.

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Vedder Pattern Works, Troy, N. Y.

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Stuber & Kuck, Peoria, Ill

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Hessler, H. E. Co., Syracuse, N. Y.
Howes, S. M. Co., Boston, Mass.
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Troy Nickel Works, Troy, N. Y.
Union Stove Repair Co., Chicago, Ill.

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Troy Nickel Works, Troy, N. Y.

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Howes, S. M. Co., Boston, Mass.

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Dighton Furnace Co., Taunton, Mass
Enterprise Stove Co., Vincennes, Ind.
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Gurney & Co., Boston, Mass.
Keeley Stove Co., Columbia, Pa.
Magee Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Portsmouth Stove & Range Co., Portsmouth, O
Prizer-Painter Stove & Heater Co., Reading, Pa
Resor, Wm & Co., Cincinnati, O.
Richmond Stove Co., Norwich, Conn.
Ringen Stove Co., St. Louis, Mo.
Schill Bros. Co., Crestline, O.
Schulte, John A. & Co., Cincinnati, O.
Shcooard, Isaac A. & Co., Phila., Pa.
Sill Stove Works, Rochester, N. Y.
Smith & Anthony Co., Boston, Mass.
Stamford Foundry Co., Stamford, Ct.
Tinnerman Steel Range Co., Cleveland, Ohio.
Walker & Pratt Mfg. Co., Boston, Mass
Weir Stove Co., Taunton, Mass

Stoves and Ranges, Gas.
Adler, H. Co., Pittsburgh, Pa.
Co-operative Foundry Co., Rochester, N. Y.
Dangler Stove & Mfg. Co., Cleveland, Ohio.
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Ringen Stove Co., St. Louis, Mo.
Standard Lighting Co., Cleveland, O.

Stoves and Ranges, Oil, Vapor and Gasoline.
Dangler Stove & Mfg. Co., Cleveland, Ohio.
Hessler, H. E. Co., Syracuse N. Y.
Keeley Stove Co., Columbia, Pa.
Ringen Stove Co., St. Louis Mo.
Standard Lighting Co., Cleveland, O.

Street Lamps, Gasolene.
Merkel, H., St. Louis, Mo.

Tanks, Steel and Wood.
Edwards, J. H., 59 Park Place, N. Y.

Terne Plates.
American Tin Plate Co., New York.

Tinners' Tools, Machines and Supplies.
Berger, L. D., Philadelphia, Pa.
Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y.

Tinners' Trimmings.
Vogel, Wm. & Bros. Brooklyn, N. Y.

Tin Plate.
American Tin Plate Co., New York.
Berger, L. D., Philadelphia, Pa.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Taylor, N. & G. Co., Philadelphia, Pa.

Tin Scrap.
Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co., Streator, Ill.

Tool Grinders.
Union Mfg. & Specialty Co., Buffalo, N. Y.

Tools and Machines, Steam and Gas Fitters'.
Armstrong Mfg. Co., Bridgeport, Conn.
Curtis & Curtis Co., Bridgeport, Conn.
Livermore, H. F., Boston, Mass.
Saunders', D. Sons, Yonkers, N. Y.

Torches, Plumbers.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Trade Schools.
New York Trade School, First Ave., 67th and 68th Sts., New York.

Valves.
Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Morgan & Co., Chicago.

Ventilators and Chimney Caps.
Berger Bros. Co., Phila., Pa.
Crown Ventilator Co., Milwaukee, Wis,
Dowman Mfg. Co., Atlanta, Ga.
Fenn, Geo. E., Boston Mass.
Globe Ventilator Co., Troy, N. Y.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

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Marston, I. G. & Co., Boston, Mass

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Wayne Anthony Mfg. Co., Ft. Wayne, Ind.

Water Coolers.
National Enameling & Stamping Co., 78 Beekman St., N. Y,

Water Closets.
Colwell Lead Co., 63 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

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Kemp, C. M. Mfg. Co., Baltimore, Md.

Water Lifts.
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Wind Gates.
Miner & Peck Mfg. Co., New Haven, Ct.

Window Frames, Metal.
Smith-Warren Co., Boston, Mass.

SEE ALPHABETICAL INDEX, PAGE 62.

THE METAL WORKER.

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Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

First-class TINNER; must be quick on wash boilers, good on jobbing, hotel and bakers' supplies. J. Melincove, 1311 Seventh street, N. W., Washington, D. C. Aug. 31

TINNER who understands hot air furnace work and general jobbing; must understand measuring plans for roofing; a steady job to the right man; must be sober. Wm. E. Hough, Morgantown, W. Va. Aug. 31

Wanted, three high-grade STOVE SALESMEN for 1902 to represent first-class stove house in Illinois, Iowa and Minnesota; none but good salesmen need apply. Box 133, care *The Metal Worker,* 1205 Fisher Building, Chicago, Ill. Aug. 31

Two good SLATERS wanted at once. Lawrence & Elmer, Hudson, N. Y. Aug. 31

First-class SHEET IRON WORKER to measure and put up indirect steam work, &e.; good steady job to right man. "J. L. R.," care *The Metal Worker,* New York. Aug. 31

Wanted, a good all-around man for country shop that understands and can do tinning, plumbing and steam heating in small houses; must be honest and sober and look after store at times; to such a man I will give steady employment and he will not have to lose any time; answer, with references, stating wages wanted, Wm. C. Cook, Branchville, N. J. Aug. 31

A good TINSMITH and an all-around man for a hardware store; must be honest and temperate. Frank Enderlin, Roxbury, N. Y. Aug. 31

A man who thoroughly understands ROOFING, HEATERS and JOBBING; must be sober; steady job. Wm. E. Williams, 105 West Tenth street, Wilmington, Del. Aug. 31

MOUNTING SHOP FOREMAN; have a good position for thoroughly competent man. Thos. Hamilton, Supt. Joliet Stove Works, Joliet, Ill. Aug. 31

A bright young man as DRAFTSMAN in steam and hot air heating business; one with some experience preferred; give references. "Manufacturer," care *The Metal Worker,* New York. Aug. 31

TINNER, steady work; state wages. Box 414, Lakewood, N. J. Aug. 31

Wanted, a high grade TRAVELING SALESMAN to sell furnaces as a side line on commission. The Forest City Foundry & Mfg. Company, Cleveland, Ohio. Aug. 31

First-class METAL CEILING ERECTORS wanted immediately; steady work to right parties; only skilled mechanics need apply. The Penn Metal Ceiling & Roofing Company, Ltd., 14 Harcourt street, Boston, Mass. Aug. 31

First-class STOVE SALESMAN for Western New York and Western Pennsylvania; state age, experience and salary. The Art Stove Company, Detroit, Mich. Aug. 31

Two or three CORNICE MAKERS for in and outside work; must be hustlers; good wages; apply at once, ready for work. Newburgh Cornice Works, Newburgh, N. Y. Aug. 31

A galvanized iron CORNICE WORKER; one who can lay out his own work. Brice Bros., 78-80 W. Chestnut street, Washington, Pa. Aug. 24

First-class PLUMBER, STEAM and GAS FITTER. Address with name, stating wages; none but first-class man need apply. John F. Ryan, Kingston, N. Y. Aug. 24

Five experienced CORNICE and SKYLIGHT MAKERS and five TIN ROOFERS; write, stating wages. James Ackroyd, 10 and 12 James street, Albany, N. Y. Aug. 24

A competent TINNER, from 25 to 35 years of age preferred; fair wages and a steady job to the right man, also he will be given an opportunity to learn the plumbing and gas fitting. Paine Bros., hardware, stoves tinware and plumbing, Ashtabula, Ohio. Aug. 24

Experienced STOVE MOUNTER. Bonnet-Nance Stove Company, Chicago Heights, Ill. Aug. 24

A first-class TINNER and PLUMBER; must be a good all around man, sober and a hustler, not over 35 years of age; state wages wanted. Helena Tin & Plumbing Company, Helena, Ark. Aug. 24

LIVE TRAVELER who visits wholesale plumbing and hose goods trade, to handle our lawn sprinklers as a side line. "Manufacturer," care *The Metal Worker,* New York. Aug. 24

Reliable, sober PLUMBER; must be a good workman and quick; $3.50 per day of nine hours and steady work. J. E. Kuchler, 320 W. Forsyth street, Jacksonville, Fla. Aug. 24

Good TINNER and good SLATER; good job for right man. Apply in person to the Peet & Schuster Company, Springfield, Ohio. Aug. 24

At once, a first-class TINSMITH and METAL WORKER; must be sober man. W. H. Pettibone, 11 East Main street, Haddonfield, N. J. Aug. 24

Wanted, agents in the States of Pennsylvania, Michigan, Ohio, Illinois, to sell our line of pieced and anti-rust tinware on salary and commission. Judd & Leland, Clifton Springs, N. Y. Aug. 24

Wanted, two first-class DIE MAKERS, familiar with making dies for stamped ware; also two first-class machinists. The Lisk Mfg. Company, Limited, Canandalgua, N. Y. Aug. 24

Two CORNICE and JOB WORKERS for shop work; must be first-class; steady work and good wages; eight hours. Warren M. Whyte, 304 Thirteenth street, N. W., Washington, D. C. Aug. 24

Wanted, at once, TINNER who understands hot air furnace work and general jobbing; state experience and wages expected for steady job for the right man. E. M. Shoupe, Fremont, Ohio. Aug. 24

Two good TINNERS who can do iron pipe work and jobbing in country shop; write, stating age, experience and wages expected; will give a steady job to the right men. Wm. Horsewood, Girardville, Pa. Aug. 24

A good TINSMITH and SHEET METAL WORKER for inside and outside work and general jobbing; a steady position to the right man. Silsby & Johnson Company, Newport, N. H. Aug. 24

A good, sober and reliable PLUMBER; one who can do steam and gas fitting; reference required. D. H. Williams, 165 Clinton street, Schenectady, N. Y. Aug. 24

A FOREMAN for tin shop employing about 15 hands; must be competent to lay out work and make estimates on sheet metal work, slate and tin roofing, furnace work; must have had experience in managing men and be of good address. Address, with references, "Columbia," care *The Metal Worker,* New York. Aug. 24

A good TINSMITH and an all around man for a hardware store; must be honest and temperate; good reference must be furnished. H. H. Dutton, Burlington Flats, N. Y. Aug. 24

By a good, sober TINNER for out and indoor work; good wages. Peschke & Peschke, Versailles, Ohio. Aug. 24

We wish immediately a strictly first-class, sober IRON STOVE PATTERN FITTER; to to the right man we will give steady work the year round; wages $3 per day; none but first-class workmen need apply. The W. J. Loth Stove Company, Waynesboro, Va. Aug. 24

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A sober and industrious young man of 33 years, with 12 years' experience at ship and house ventilating, wants a position at LAYING OUT or as FOREMAN; can give best of reference and will come on trial. "M. D.," care *The Metal Worker,* 117-119 South Fourth street, Philadelphia, Pa. Aug. 31

A first-class PLUMBER, STEAM and GAS FITTER, having 15 years' experience; city or country; sober and reliable. 531 Grant avenue, Van Nest Park, New York. Aug. 31

PLUMBER desires work out of town. F. Schaefer, 307 East Eighty-fifth street, New York. Aug. 31

First-class PLUMBER wants work, city or country; reference furnished. "E.," care *The Metal Worker,* New York. Aug. 31

By a strictly sober and reliable man; can do bench work, roofing, piping and spouting, furnace, hot water and steam, and a fair knowledge of plumbing; a first-class jobber in all branches; Massachusetts preferred. Box 325, Northboro, Mass. Aug. 31

BRASS and COPPER SALESMAN desires position. "F. A. L.," care *The Metal Worker,* New York. Aug. 31

Steady position as FOREMAN in first-class tin or sheet metal working factory; have had 18 years' experience, two years as foreman; strictly temperate, honest and reliable; best of references. J. H. Brown, 1368 Brook avenue, New York. Aug. 31

As a SALESMAN on the road or inside; have long experience in hardware, tinware and stoves; can speak German and English. "F. J. H.," care *The Metal Worker,* New York. Aug. 31

First-class PLUMBER wants position. P. Kelly, 194 Concord street, Brooklyn, N. Y. Aug. 31

TRAVELING SALESMAN, any line or territory, well known, thoroughly experienced, desires to change. Geo. Havoren, General Delivery, Philadelphia, Pa. Aug. 31

A first-class SALESMAN, aequainted with the building and contracting trade of New York and vicinity. "A. L. C.," care *The Metal Worker,* New York. Aug. 31

As SUPERINTENDENT of manufacturing plant making a general line of hardware and electro-plated wares; have had 15 years' experience with one of the largest plants in the United States. "Wilmington," care *The Metal Worker,* New York. Aug. 31

A1 FOREMAN or CUTTER for cornices and skylights, heating and ventilating, with best of references, wishes a position; only large concerns which like to do good work answer this advertisement. "Able Foreman," care *The Metal Worker,* New York. Aug. 31

By a first-class ENAMELER; 25 years' experience in enameling, sheet steel, iron and cast iron. P. O. Box 8, Laurel Hill, Queens County, N. Y. Aug. 31

By a young man, nine years' experienee at plumbing, wants position in a country shop where he can learn steam and hot water fitting, tinning and furnace work; will accept moderate wages for above chance. "W.," care of "Kremla," 1574 First avenue, New York. Aug. 31

Position in town of 3000 to 5000 inhabitants by an experienced hardware and implement man; eight years' experience in general hardware, stove and farm implement store; four years as assistant manager; references furnished. Wm. Bolce, Jr., Bedford, Pa. Aug. 31

A TIN and SHEET METAL WORKER would like a job in tin and sheet iron shop; ten years' experience; sober; would like a situation in Massachusetts or Maine. Box 22, Maitland, Hants County, Nova Scotia. Aug. 24

Expert PATTERN CUTTER and SHEET IRON WORKER, experienced at blowpiping, exhaust, heating and ventilation, wishes situation where ability, knowledge, industry, honesty and sobriety will be appreciated; wages $3. "Pattern Cutter," care John Walker, 218 N. Front street, Philadelphia, Pa. Aug. 24

As CUTTER and FOREMAN; can make estimates on cornice, skylights, furnaces, tin and slate roofing and general job work, and can handle men to advantage and do a good day's work. "Sheet Metal," 137 West Second street, Lexington, Ky. Aug. 24

Steady position as FOREMAN in a first-class tin or sheet iron working shop; 18 years' experience; strictly temperate, honest and reliable; first-class references. J. H. Brown, 1368 Brook avenue, New York. Aug. 24

A practical MANUFACTURER of tin plate is open for position; ten years' experience making all grades; originator of several machines. "Tin Plate," care *The Metal Worker,* New York. Aug. 24

By a PLUMBER and TINSMITH who has had long experience in all kinds of country work in all branches and who understands it thoroughly; best references. "Plumber," 129 Jefferson street, Stamford, Conn. Aug. 24

Position as inside CORNICE and SKYLIGHT MAKER; can work from drawings; vicinity of Greater New York preferred. "Cutter," care *The Metal Worker,* New York. Aug. 24

By a young man who understands cutting and estimating; no objections to working on bench; 13 years' experience. "Cornice," care *The Metal Worker,* New York. Aug. 24

By a STOVE PATTERN MAKER, ARTISTIC CARVER and DESIGNER; 30 years' experience; permanent position desired in a stove works; competent to get up first-class new work of the latest design, altering and reornamenting. "F. C. Expert," 426 Fourth avenue, Lansingburg, N. Y. Aug. 24

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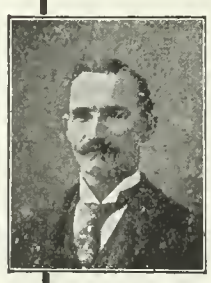

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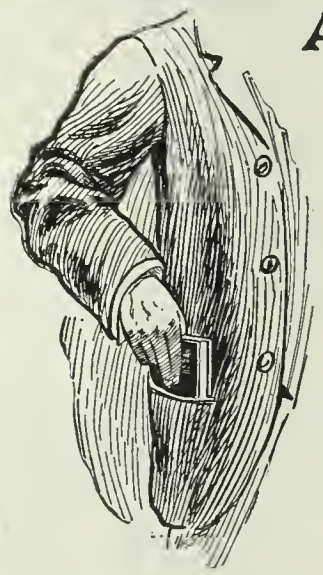

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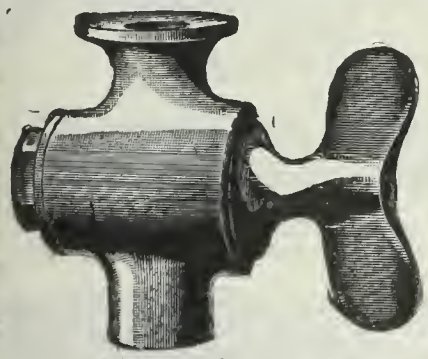

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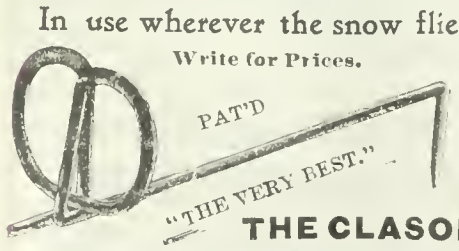

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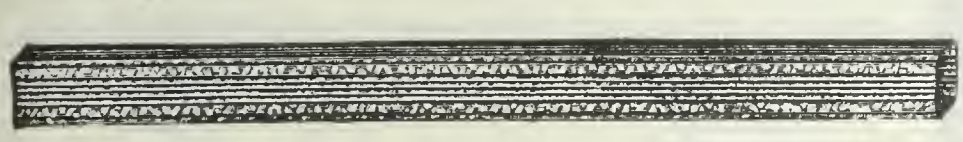

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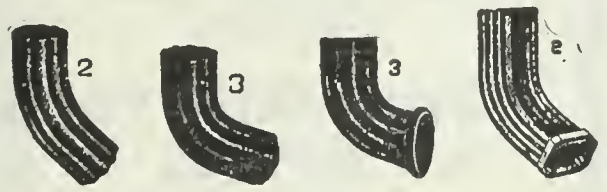

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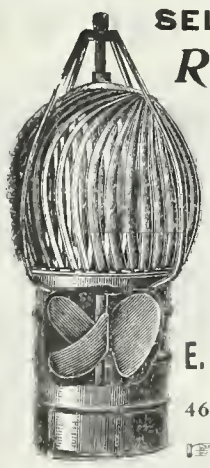

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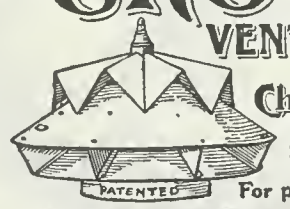

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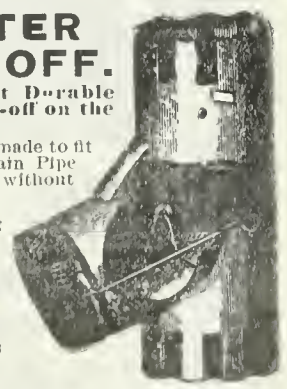

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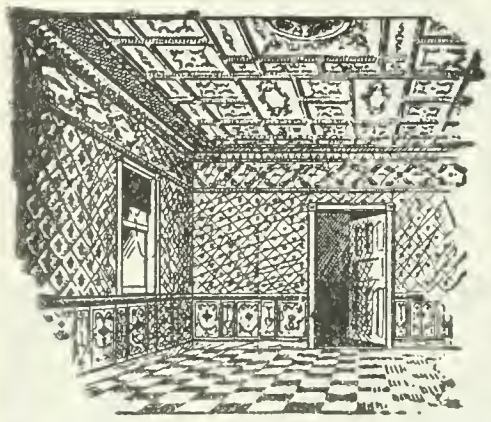

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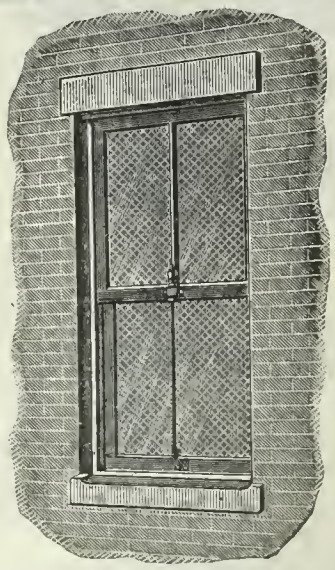

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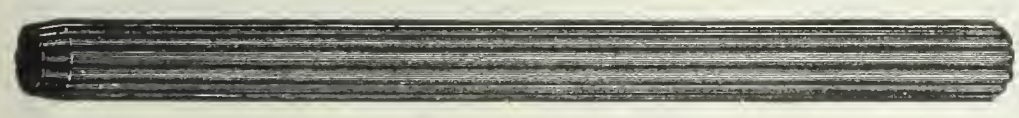

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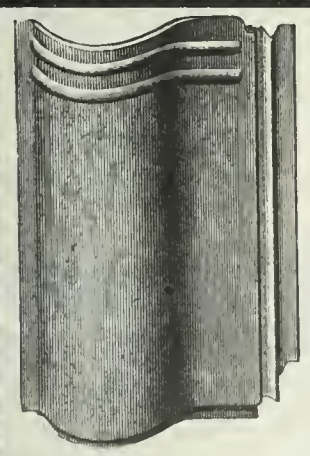

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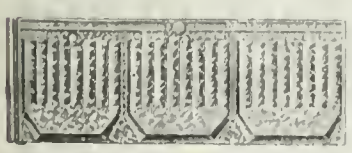

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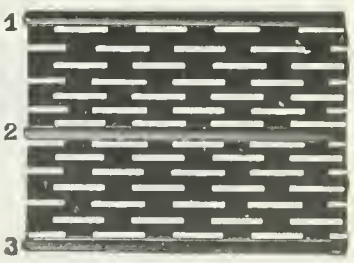

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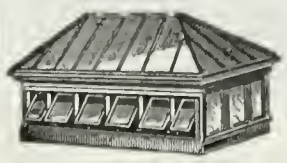

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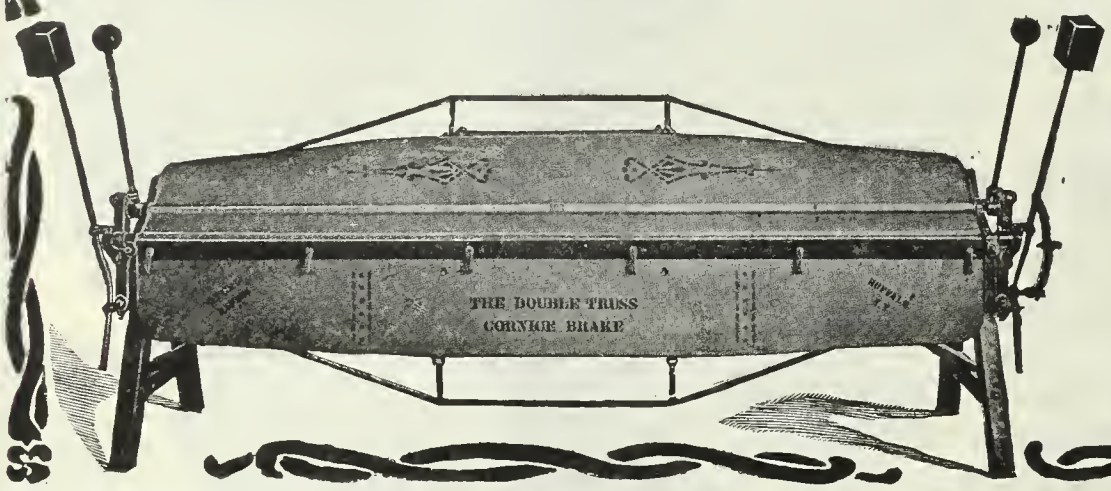

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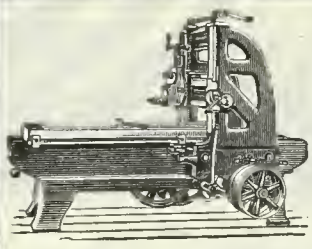

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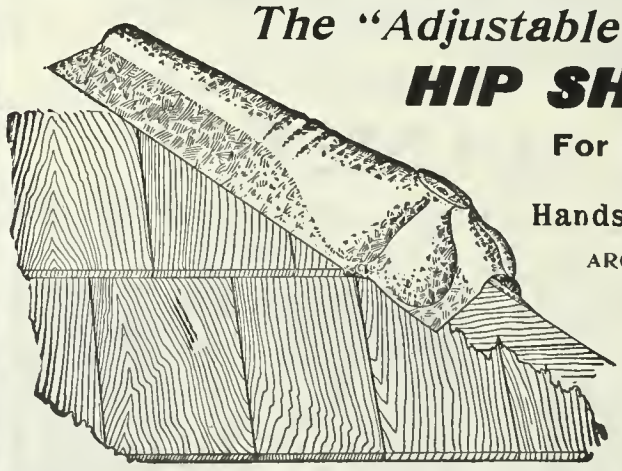

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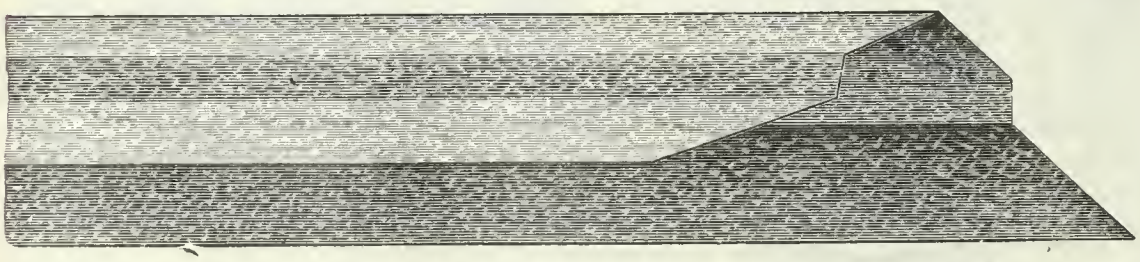

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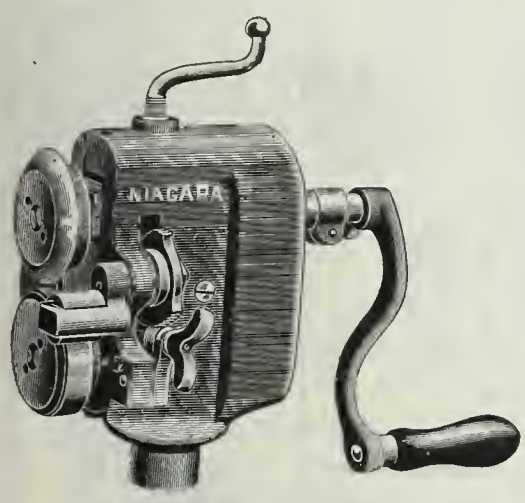

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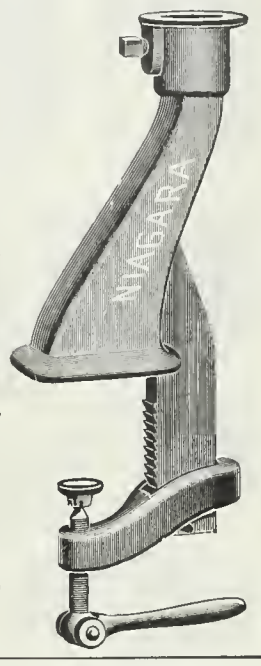

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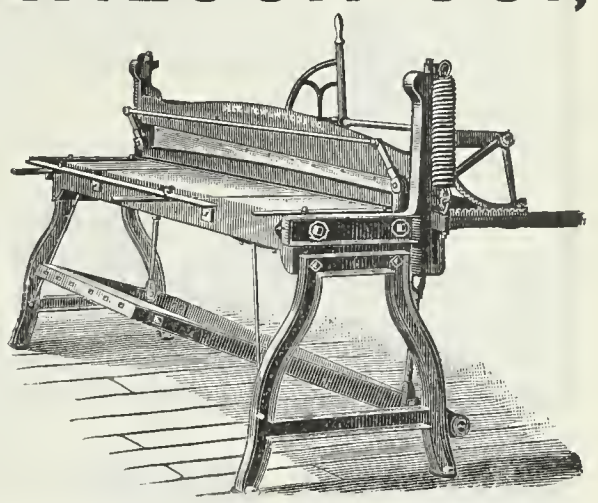

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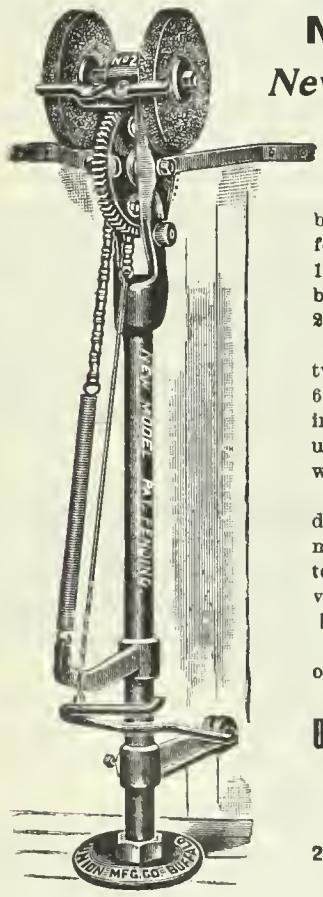

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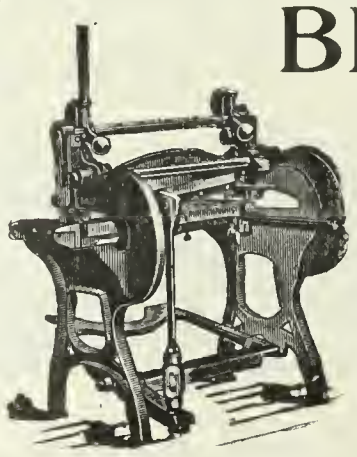

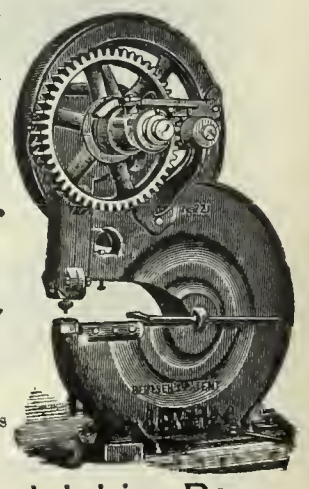

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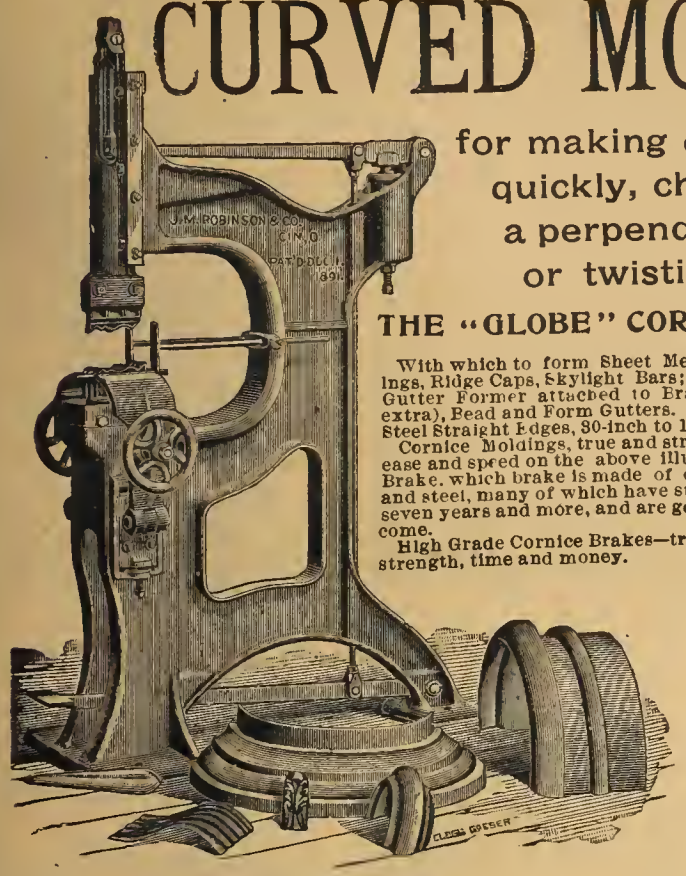

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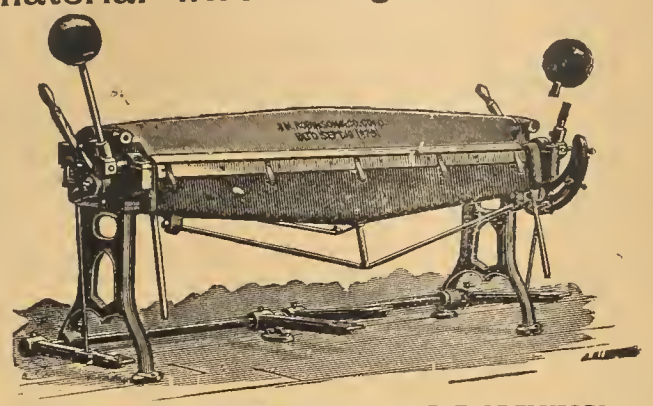

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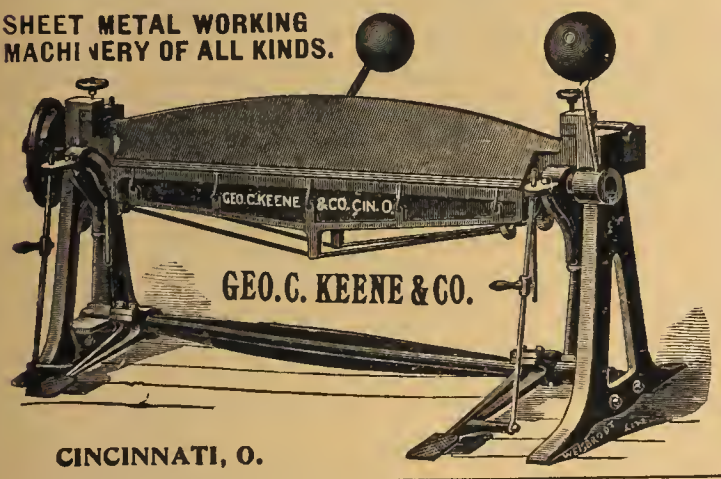

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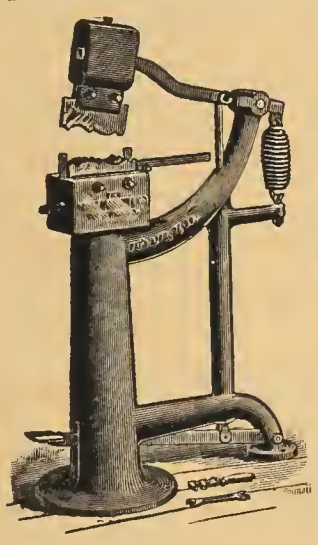

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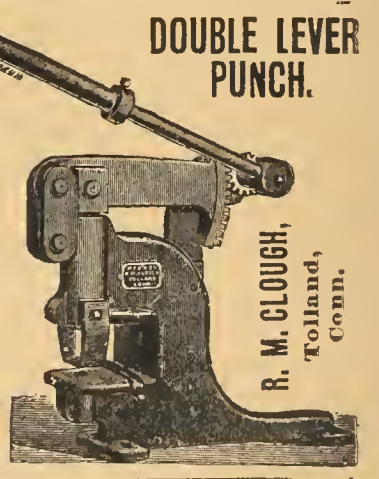

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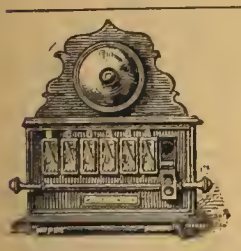

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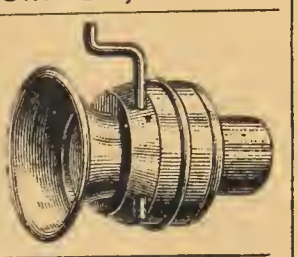

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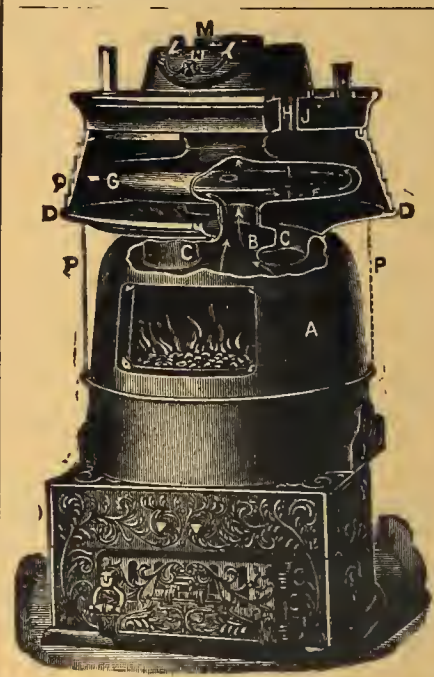

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Index to Reading Matter, Page 58.

Index to Advertisements, Pages 60 62.

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A WEEKLY JOURNAL OF THE ROOFING, CORNICE, STOVE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

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THE DIGHTON FURNACE Page 18

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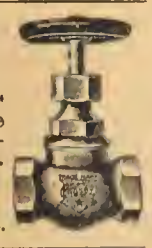

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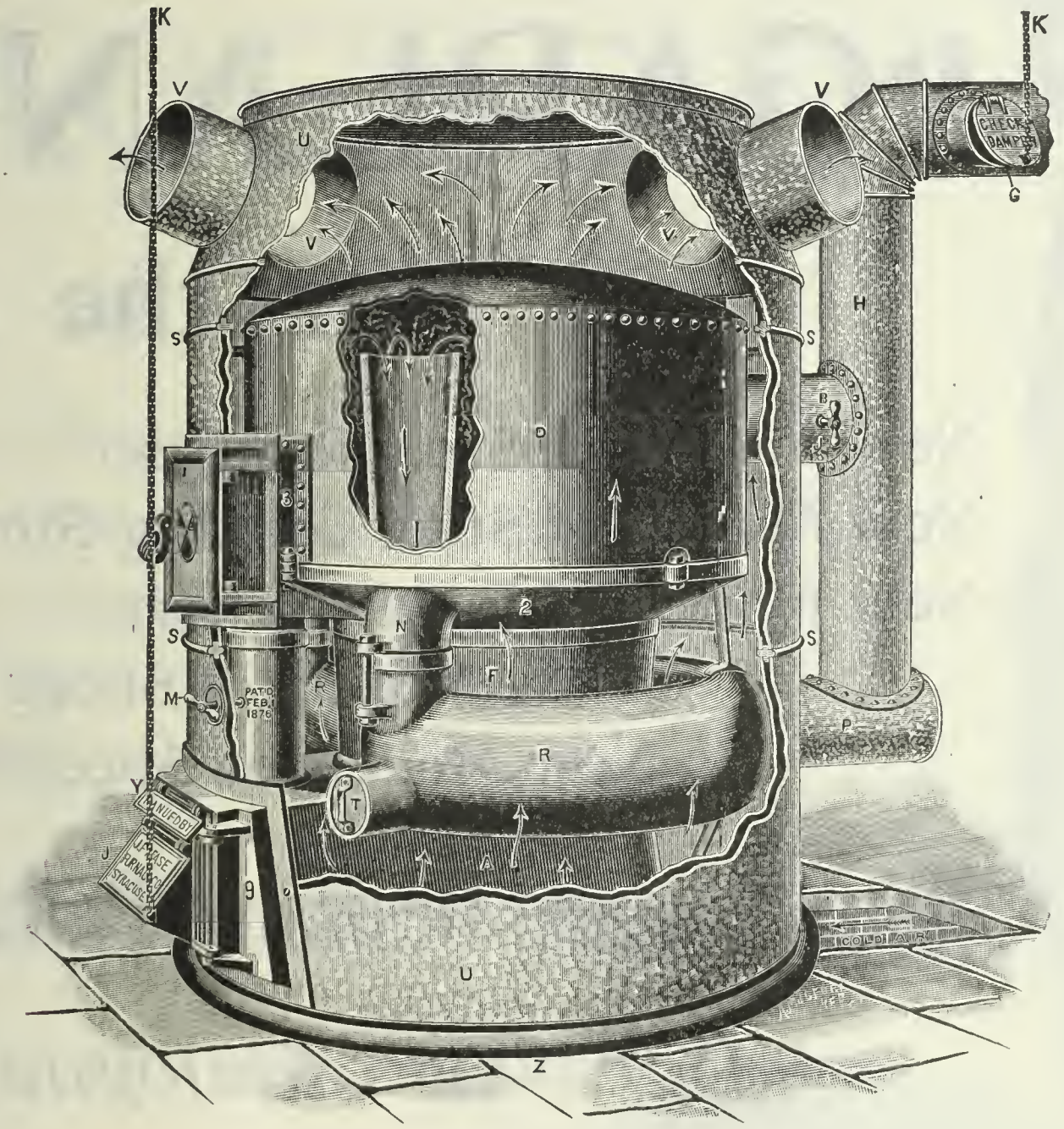

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This is a Heavy, Durable Heater of the Highest Efficency, but of Moderate Price. : : : : : :

International Heater Co.,

UTICA, N. Y.

BOSTON, NEW YORK, CHICAGO, DENVER.

Largest Makers of Heaters in the World.

GAR ST RA

"The W

Nothing too

"GARLAND

For the Se

New Models of Steel Ranges.
New Models of Steel Cooking Stoves.
New Models of Base Burners.
New Models of Sheet Iron
New Models of Sheet Iron H

More New and Desirable Patterns

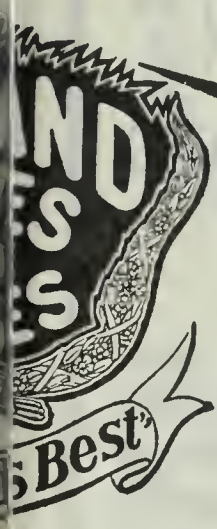
Our New Catalogue is y

The Michigan S

Largest makers of Stove

DETROIT. CHI

WORKS AT DETROIT, MICHIGAN.



Good for

AGENCIES

on of 1901.

New Models of Cast Ranges.
New Models of Cast Cooking Stoves.
New Models of Oak Stoves.
ters for Coal (Hot Blasts).
ters for Wood (Air Tights).

an Have Ever Before Been Offered.

rs for the asking.

---

ve Company,

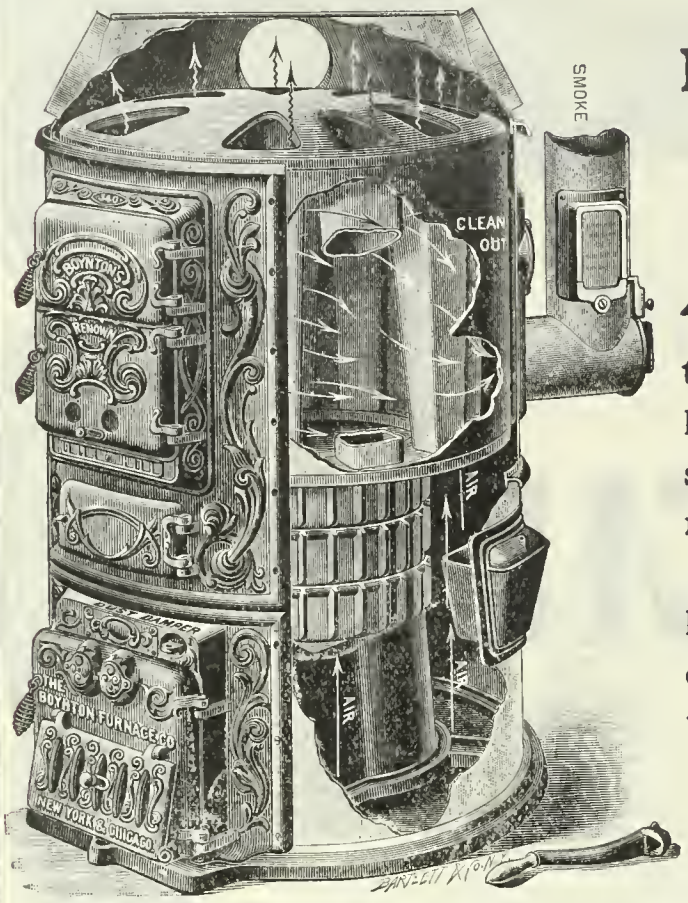
l Ranges in the World.

. BUFFALO.

WESTERN HEADQUARTERS. CHICAGO.

BOYNTON'S "RENOWN"

PORTABLE FURNACE



A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**

NEW YORK, CHICAGO.

The American

M & D

Steel Range.

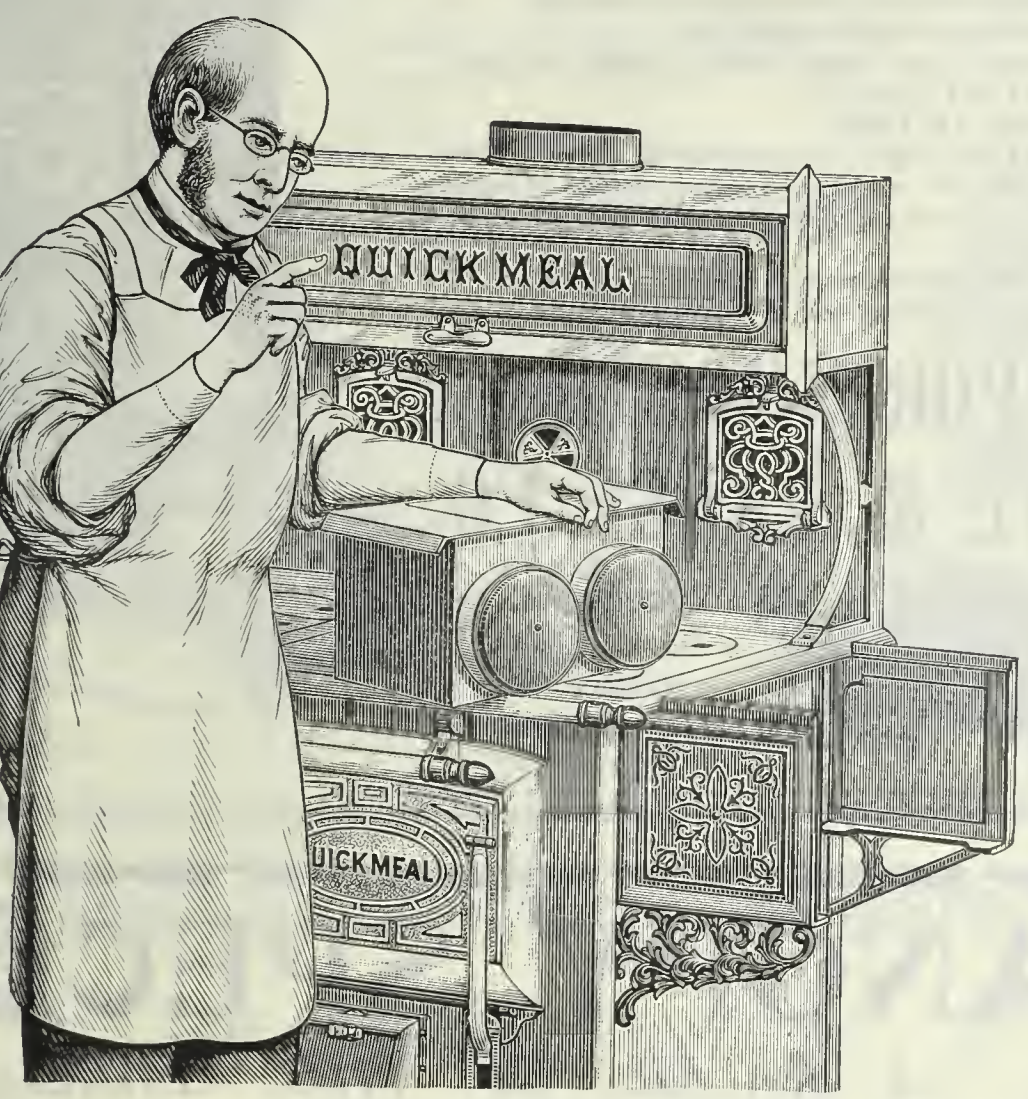
BEST ON EARTH.
HIGHLY ORNAMENTED.

The heaviest, strongest and best working range on the market. Reservoirs portable, ***white enameled inside and out,*** or ***encased*** as desired. Large poke door on end, with or without ***feed pouch.*** ***Duplex-dock ash*** or wood grate, all slide out. Heavy cast iron back flue. Poised oven doors.

4 sizes, 16, 18, 20 and 22 inch ovens. We make all sizes Family, Hotel and Combination Steel Ranges.

M & D RANGE COMPANY, 96, 98, 100 Lake Street, Chicago.

QUICK MEAL



The practical old-time Tinner says:

A SIMPLER, MORE PERFECT or BETTER FITTING RESERVOIR could not be made than the

New "Quick-Meal" Right-Hand Reservoir.

It is SIMPLE, DURABLE and PRACTICAL. **Nothing else like it on the market.** No dampers to interfere with the draft or confuse the operator. The outside casing is ornamental and so arranged as to allow the air to circulate between the casing and the Reservoir, preventing sweat and steam from draining down the Reservoir sides.

"Quick Meal" Reservoirs are made of Copper, its pockets being drawn out of one piece of extra heavy copper, double seamed to the body and covered on the fire ends with a piece of heavy sheet steel to protect the copper from the extreme heat. When he Reser oir is in place the pockets project through the right wall of the Range and fit flush on the inside, making no obstruction in the flue and allowing the heat to come in direct contact. They are as good as the "Quick Meal" Left-Hand Reservoir—they could not be BETTER—but they are better than any right-hand reservoir ever made.

RINGEN STOVE Co. SAINT LOUIS

Model Radiator

For Hard or Soft Coal.

Made in four sizes, Nos. 12, 14, 16 and 18.
Every stove a single or double heater complete, without the use of extra parts.
Large heating surface—Equal to that of an Oak.
Best and simplest reversible pipe collar.
Very substantial outer casing, which is easily removed.
Joints ground and cemented.
All doors fitted Air-Tight.
Our patented Air-Tight draft register in Ash Pit Door.
In this stove we use our new patented method of holding the sheets of mica. They will not get out of place or smoke up.
Handsome Nickel Ornamentation.
A postal card will bring you more information.

THE PORTSMOUTH STOVE & RANGE CO.,

THE BUSIEST MAKERS OF STOVES & RANGES IN THE WORLD

Portsmouth, O.

MORLEY BROS.,
Saginaw, Mich.,
Agents for Michigan and the Northwest

MODEL RADIATOR.

CANOPY SPECIAL.

A RANGE OF THE TIMES.

Specially made to please special people at a special price. . . .

The construction of the fire box, oven and flue system in the **Canopy Special** assures the greatest economy in the consumption of fuel and produces the most successful results in baking.

Neat and Attractive in Design.
Construction Excellent Throughout.
Tasteful in Ornamentation.

FOUR SIZES OVENS. SEVEN SIZES TOPS.

Fire Box Fixtures Strong and Durable. Plates can be Removed with Ease.

Ornamental High Shelf. Ornamental Tea Shelf.
Large Reservoir or Water Front.

All Agents selling CANOPY RANGES are protected against the usual competition of other ranges.

SEND FOR CATALOGUE AND FULL PARTICULARS.

BUCKWALTER STOVE CO., = Box 10, = Royersford, Pa.

CRAWFORD RANGES

WITH THE LATEST IDEA,

REMOVABLE RAILS.

(Patent Pending.)

THE new "Charm Crawford" is a medium-grade range, with more improvements than any before. It is impossible to describe it here; send for circular.

THE

CRAWFORD OAK

Will outsell all others. Draw-center or triangular grates. Genuine ash pan, 4 1-2 inches deep. The price may interest you.

Walker & Pratt Mfg. Company,

Finest Stove Foundry in the World.

31-35 Union St., - - - Boston, Mass.

For Beauty, Simplicity, Convenience and Heating Power,

The Improved....

"NEW PROCESS"

AND

"IMPROVED" Standard OIL HEATERS

Excel all others.

You must order early if you expect to get heaters this year. Our jobbers have them.

BOOKLETS READY.

THE STANDARD LIGHTING CO., Cleveland, Ohio.

M TRADE MARK

Moore's Quick Oven Stoves

M TRADE MARK

A Straight Proposition

The Bottom of the Bottom is more important for you to know about than the top of the bottom. The top of the bottom may be apparently all right, and yet the bottom of the bottom be all wrong and so lacking for proper braces that it will **HUMP ITSELF** on the least provocation.

OUR BOTTOMS are all straight. We are at the bottom of the Steel Cook Stove business—made the first one, and have made more of them than all our imitators put together. We make them right, that's why—make the comparison yourself, and you will find that the bottoms in Moore's Steel Stoves are straight.

JOLIET STOVE WORKS, JOLIET. ILLINOIS.

HOLBROOK, MERRILL & STETSON, San Francisco, Sacramento, Los Angeles.

THE ETNA FURNACE

Is a furnace worth talking about and selling.

It is the result of twenty years' experience in hot air practice, and knowing the wants and the requirements necessary to produce su cessful, satisfying results we made the Etna accordingly.

The Etna contains many strong, practical features not found in the majority of others. We feel satisfied they will meet the approval of every dealer who has been up against the heating problem and encountered its difficulties. We have smoothed out some of the rough places.

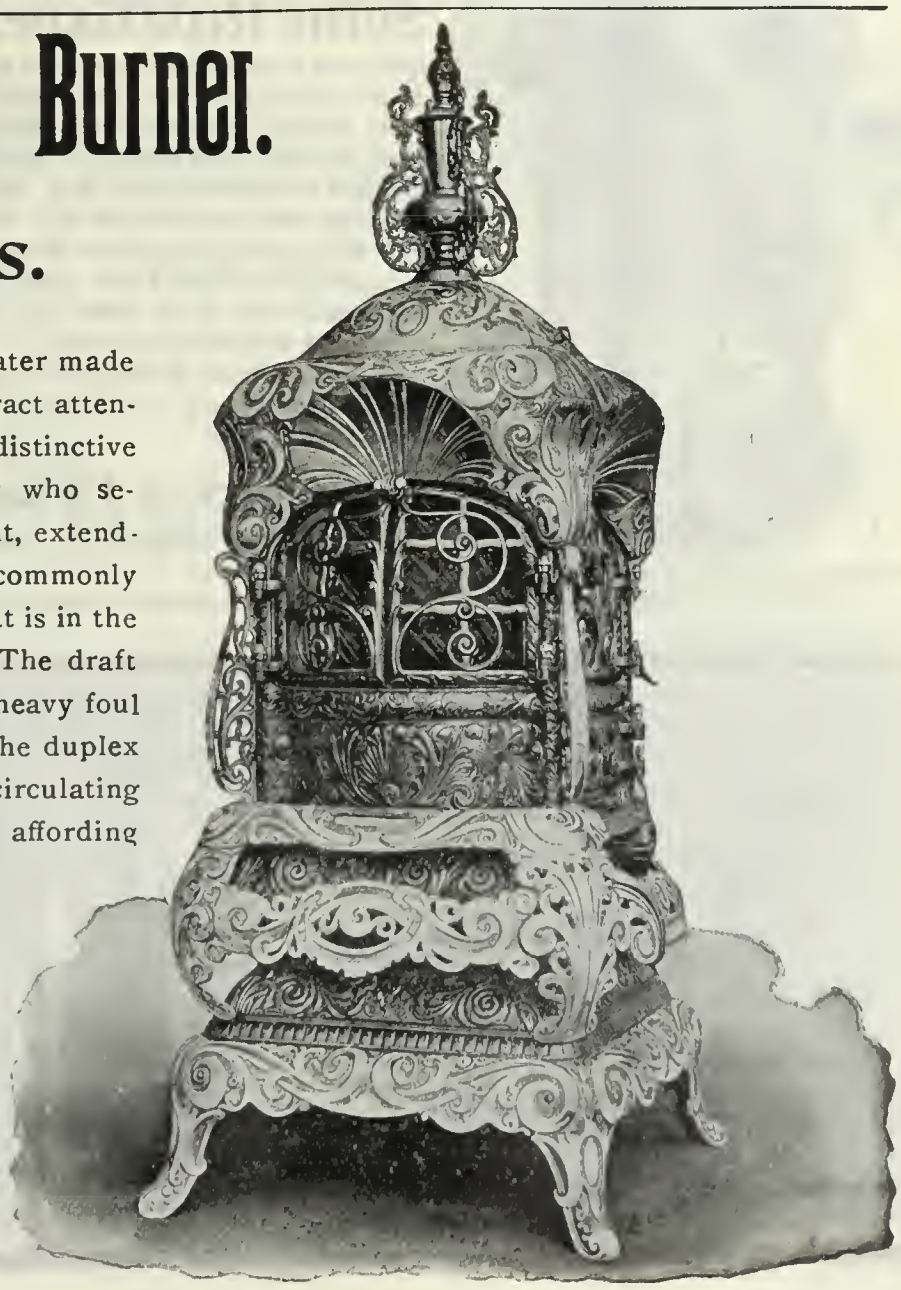
READ THE CATALOGUE. SENT FOR THE ASKING.

Pittsburgh Stove & Range Company

PITTSBURGH, U. S. A.

The Monitor Base Burner.

High Art Series.



It is without doubt the most powerful heater made and its rich and graceful appearance will attract attention at once. The novel construction and distinctive features offer every advantage to the dealer who secures the agency. The diving flue is in front, extending entire width of stove, being what is commonly known as a sheet flue, thus the greatest heat is in the front of the stove where it is most needed. The draft is taken in through the bottom, carrying the heavy foul air which settles near the floor. Grate is of the duplex pattern with outer shaking ring. Two large circulating flues are fitted in rear corners of the stove, affording ample circulation for heating evenly the largest room. Send for new Catalog and secure the agency without delay.

The Wm. Resor & Co.,

CINCINNATI, U. S. A.

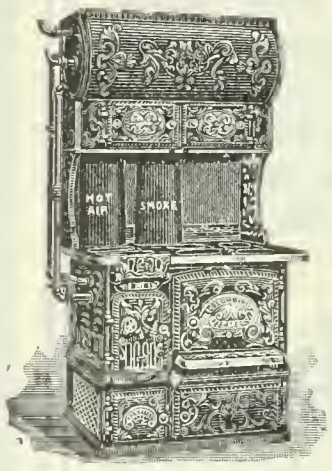
CATALOGUES SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

DEALERS, BUILDERS AND OWNERS



Should secure our Line of Goods. They will then have the Best on the Market.

The Columbian Banner, Comet, Prince and Climax Furnaces, and the Columbian Peerless, Victor, Newport, Star and Triumph Ranges are all substantial, efficient and economical.

ALL KINDS OF WOOD AND COAL

Airtights, Base Burners, Globe and Cylinder Stoves, Gasolene and Oil Stoves.

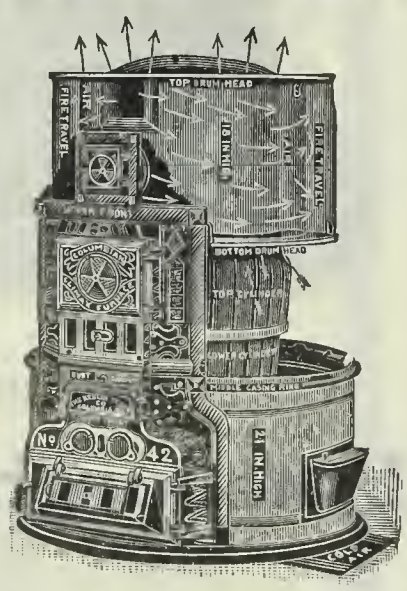
Write us for full information and catalogues.

THE KEELEY STOVE CO.,

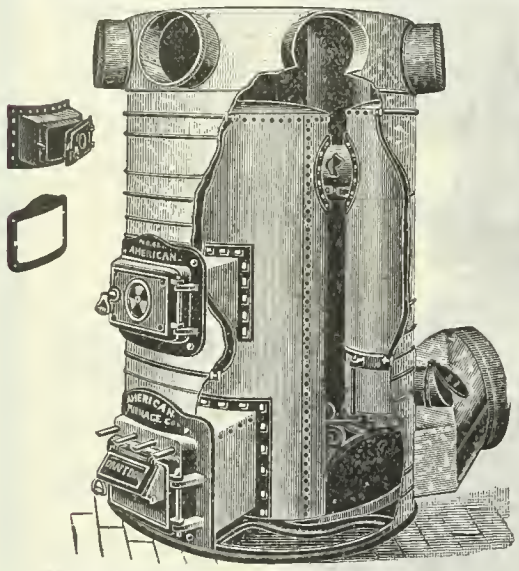
COLUMBIA, PA.

COLUMBIAN LINES.

Chicago Branch: JACOB RETTERER, 167 and 169 Lake St., Chicago, Ill.



COLUMBIAN LINES.



Burn Hard or Soft Coal, or Coke. Large Doors.

Some Ripe Experience

Has come to us through watching the doings of dealers throughout the United States.

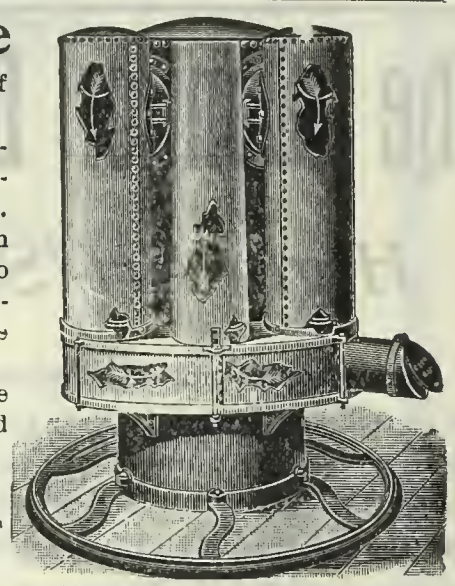
We find that the dealer who sells cheap furnaces not only loses ground in the furnace business but also has a falling off in his other lines.

On the other hand we can say that the man who sells a good furnace and charges enough to do a good job will, in a few years, be the leading furnace man in his town and at the same time build up his other business.

The ***American Furnace*** is made for the better class of trade; is durable, clean and economical in fuel.

The American Furnace Co.,

1911-13 PINE STREET, ST. LOUIS, MO.



Large Radiators, easy to clean out

Write for prices and secure the agency before the other fellow gets it.

JEWEL STOVES AND RANGES..

JEWEL STOVES AND RANGES
DETROIT STOVE WORKS
LARGEST STOVE PLANT IN THE WORLD

A Complete, Well Advertised Line; Low Prices and Good Workmanship.

Please Write for Catalogue.

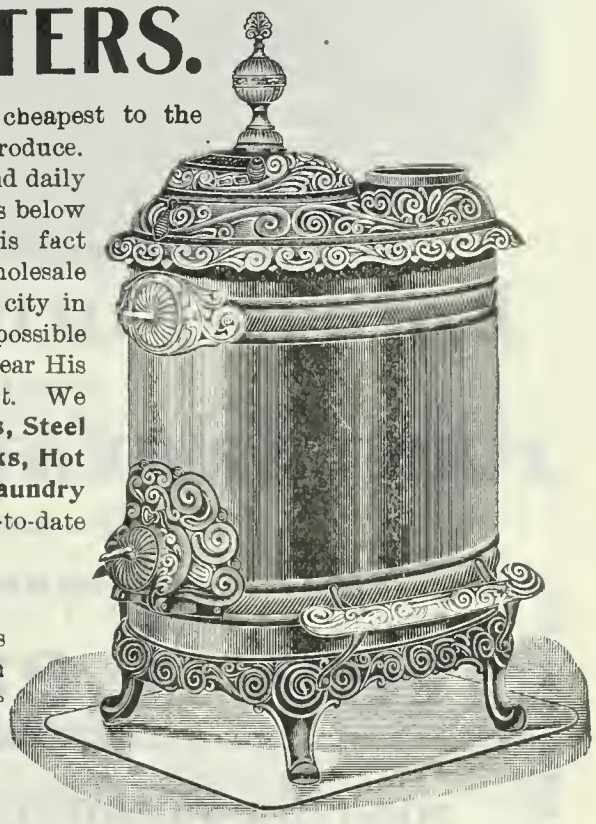
DETROIT STOVE WORKS.

Detroit - Chicago.

AIR TIGHT HEATERS.

Our line in these comprises everything from the cheapest to the very finest finish possible to produce. Our manufacturing facilities and daily output justify us naming prices below any possible competition. This fact has enabled us to establish Wholesale Agencies in nearly every large city in the United States and makes it possible for us to supply the Dealer "Near His Door," saving time and freight. We also manufacture **Steel Ranges, Steel Cooks, Cast Ranges and Cooks, Hot Blast Coal Heaters, Oaks, Laundry Stoves, Radiators, etc.**, all up-to-date goods.

Write us for particulars and we will put you in the way of making some money.



EXCELSIOR STOVE & MFG. CO., - Quincy, Ills.

Up-to-date Air-Tights.

COSEY—Style C. HOT BLAST.

We Want Your Business!

Our Goods Are Strictly HIGH-GRADE and DURABLE.

We Make 65 Styles and Sizes of AIR-TIGHT HEATERS.

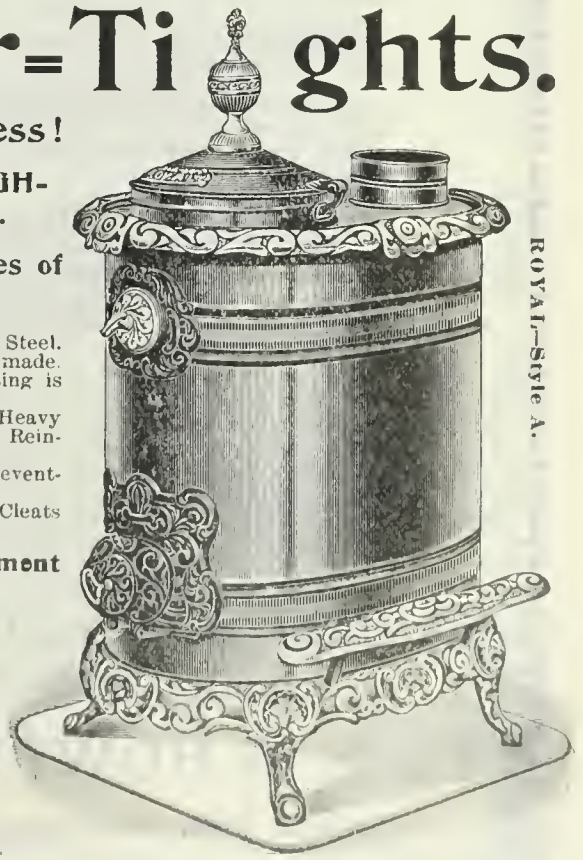
Our Heaters are made of Blue Polished Steel. Superior Finish. Best Proportioned Stoves made. Our Castings are Smooth. Our Mounting is perfect.

Screw Draft, Spark Arrester, Extra Heavy Linings, Plate in Cover, Hinged Cover, Reinforced Tops that will not Warp.

Fuel Opening made with Wire Edge, preventing buckling and getting out of shape

Bottoms Double Seamed. Feet Bolted to Cleats underneath Stove to prevent slipping.

Large Capacity. Prompt Shipment GUARANTEED.



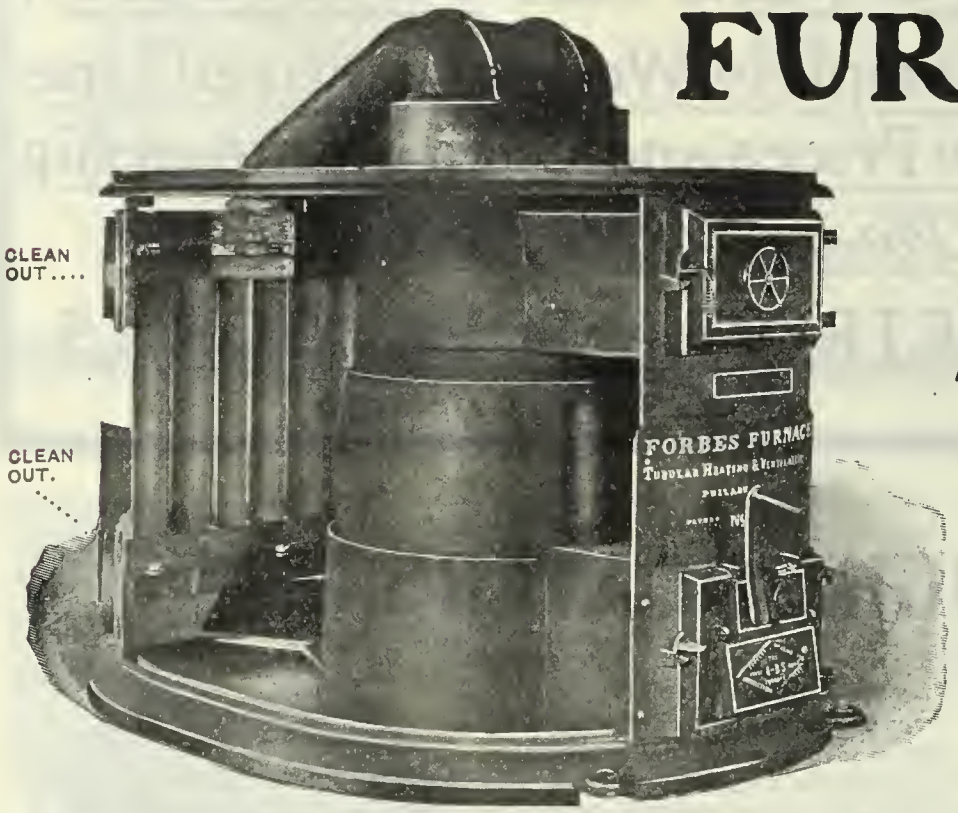
ROYAL—Style A.

Quincy Foundry & Novelty Co.,

QUINCY, ILL.

Write for Catalogue and Prices.

FORBES (IMPROVED) WARM AIR FURNACE.



ONLY 4 FEET 3 INCHES HIGH.

Compact and Simple Construction.

Aluminum Tubes

IN RADIATOR ARE RUST PROOF.

Triplex Grate.

PERFECT SHAKING. PERFECT DUMPING.

Each Bar can be separately replaced.

Forbes Furnaces

Save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE AND PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

232 Quarry St., PHILADELPHIA, PA.

New Leader Furnace

POINTS OF CONSTRUCTION

ASH-PIT has great depth, with flush front. Full sized door.

Grate in full view, making the removal of ashes very easy—*not so with low ash-pit doors.*

Not a square inch of solid substance to obstruct the draft, avoiding clinker formation.

Grate is easily taken apart as there are no bolts used. The cutting off of corroded bolts takes time and costs money.

By simply removing the plate in front of the cogs the bars can be replaced by unhooking them from the yokes. This is a new and desirable feature.

Feed Dome is made in one solid casting from fire pit to radiator and offers a large surface for the direct rays of the fire.

Fire Pot is made in two sections, heavy and particularly durable.

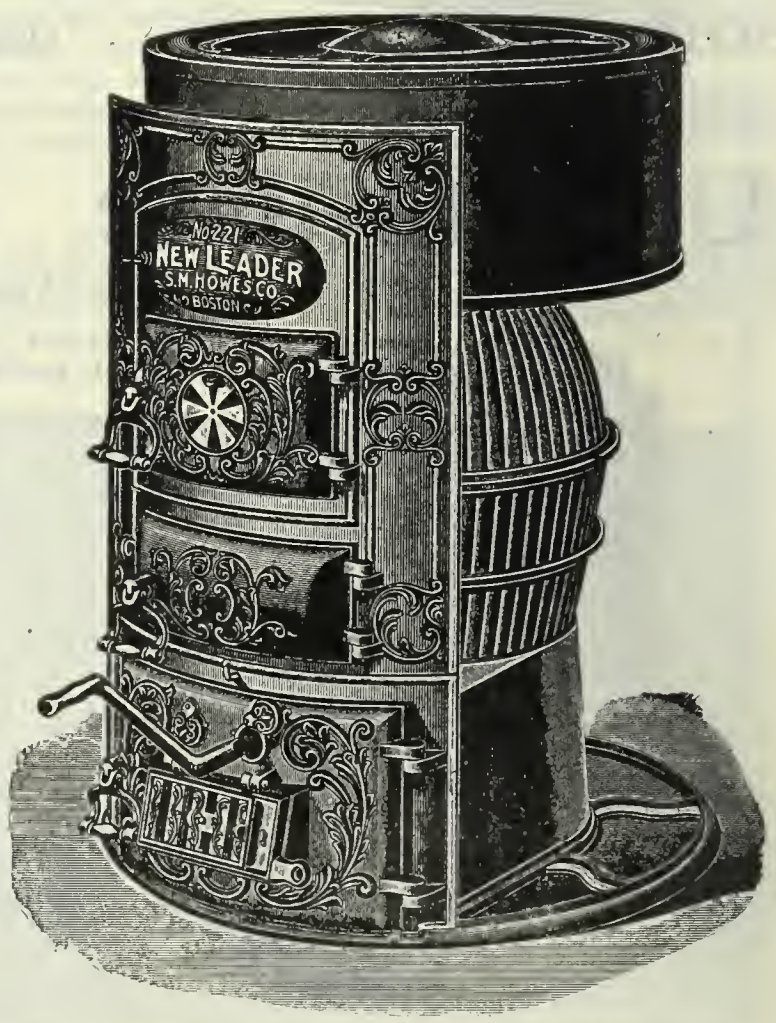
Dust Flue is placed in front of the furnace and extends from ash-pit to feed dome. It is large and has a damper.

Radiator is mounted with best quality refined steel.

5 SIZES:

20, 22, 24, 26, 28 in. fire pot.

SEND FOR PRICES.



The S. M. HOWES CO.

40-42-44-46 Union St., Boston, Mass.

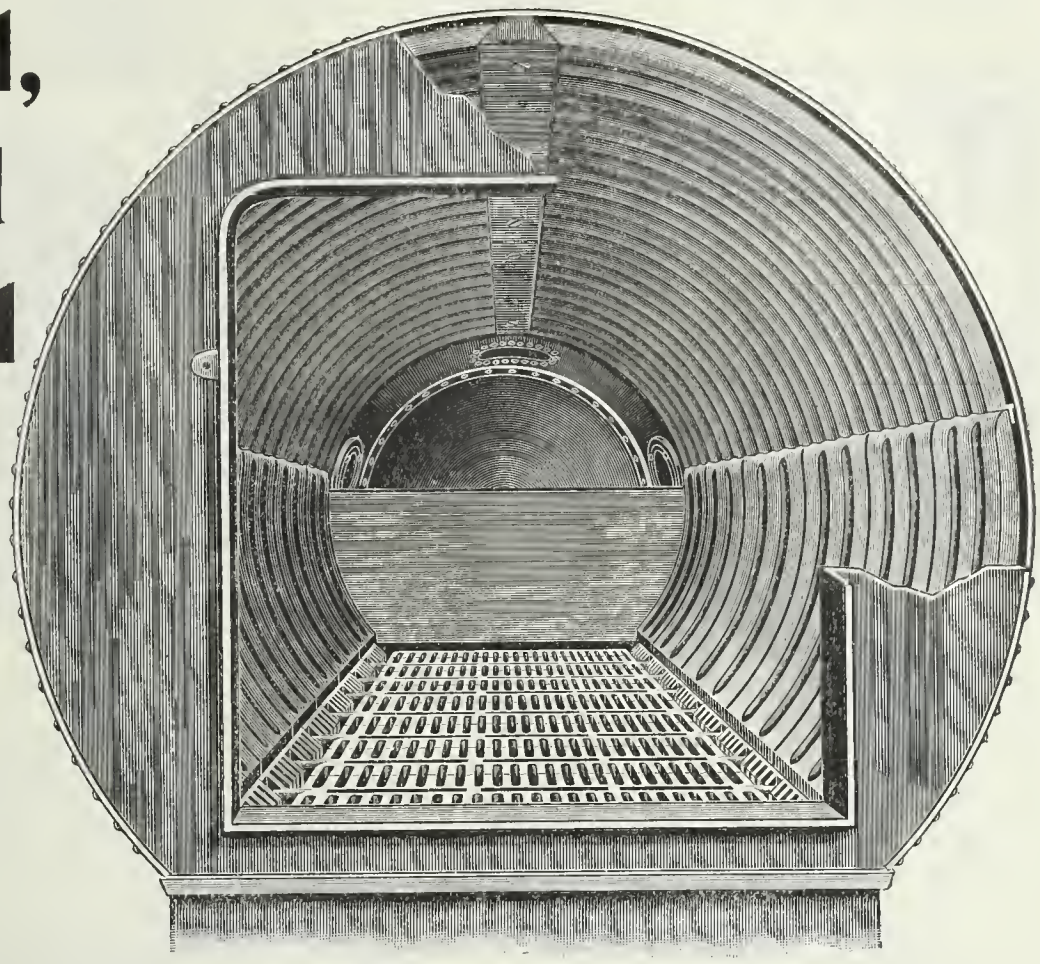
A Powerful, Durable and Economical Heater

For Schools, Churches, Halls and other Public Buildings.
Has a heating capacity of from 150,000 to 200,000 cu. ft.

ARE YOU NOT IN NEED OF JUST SUCH A HEATER?

Write for Our 1901 Catalogue.

Everything in the Heating Line.

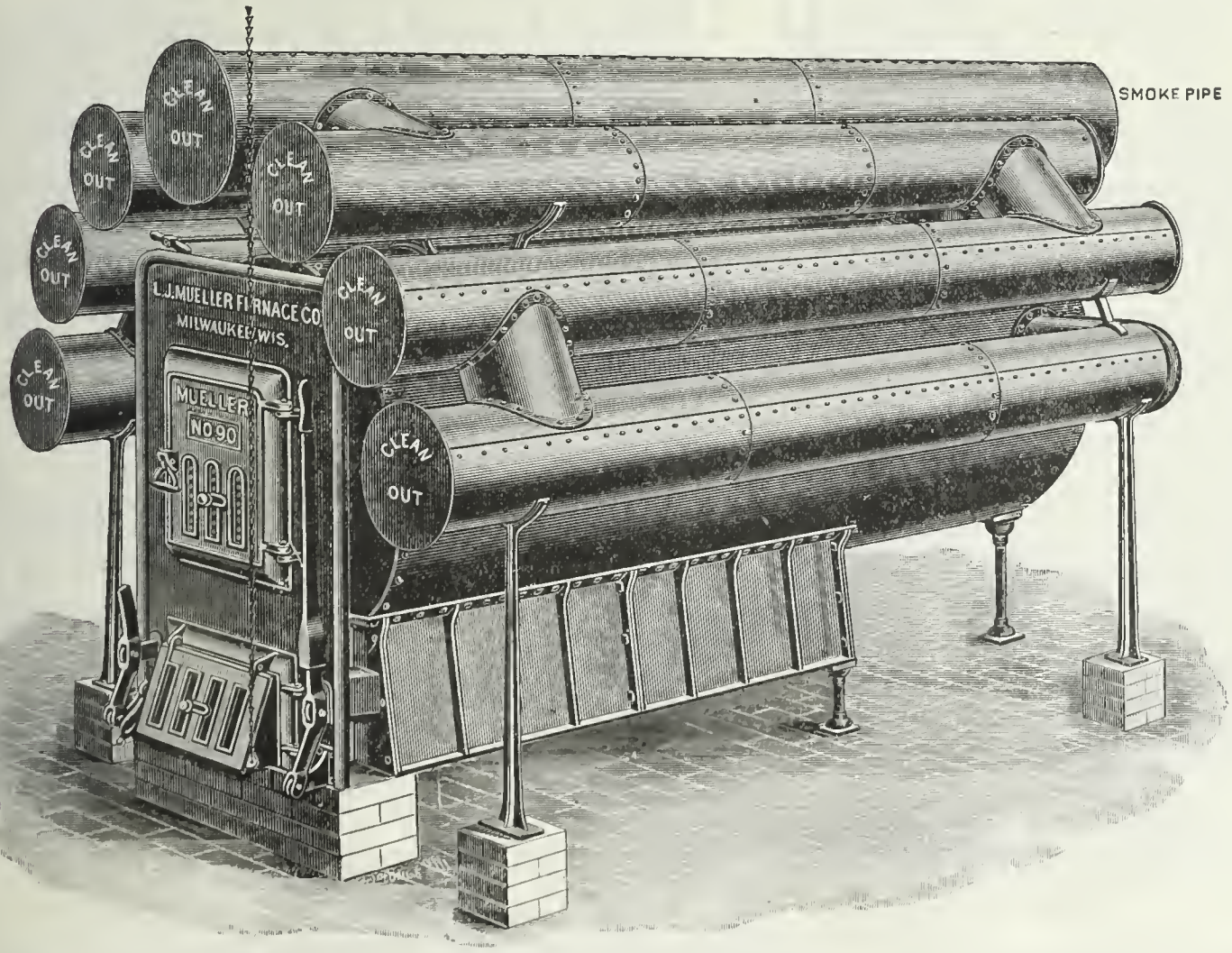


Interior View of No. 90-A, Showing Grate and Hollow Fire Box Liners.

L. J. MUELLER FURNACE CO.,

ESTABLISHED 1857.

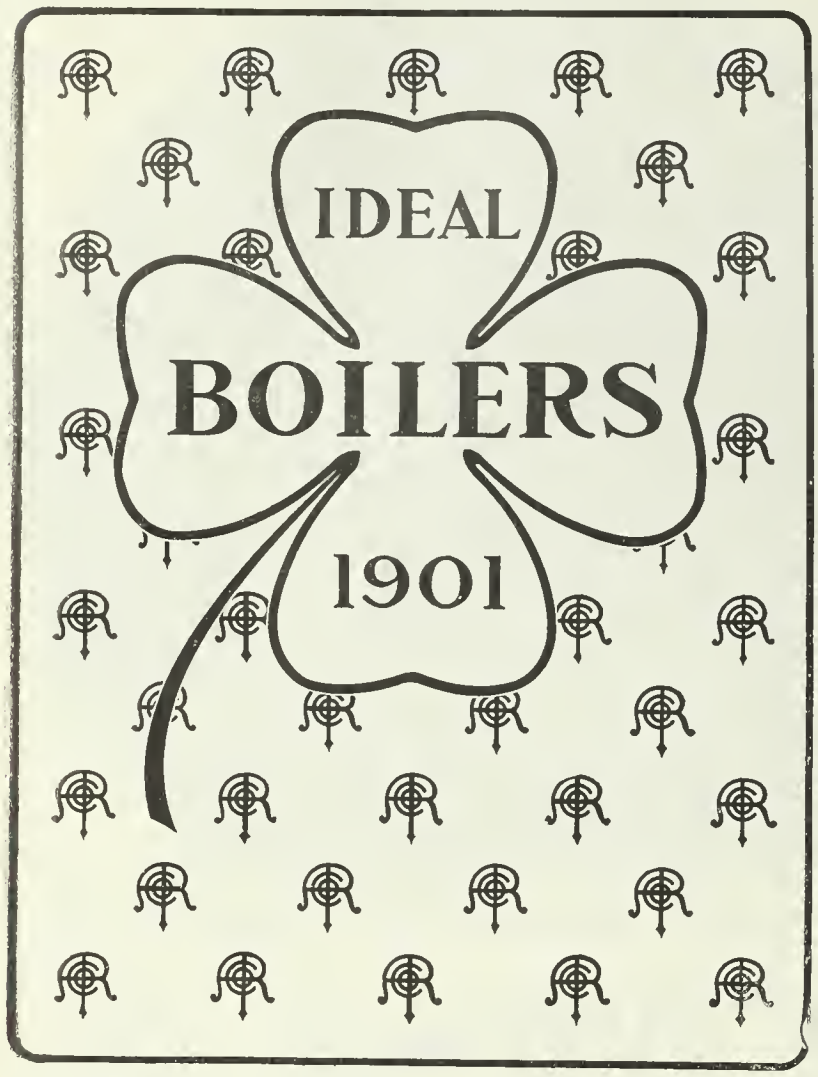
190 Reed Street, MILWAUKEE, WIS.



Mueller School and Church Furnace.

No. 90, for Hard Coal. No. 90-A, for Soft Coal. No. 87, for Long Wood.

CAN NOT BE SURPASSED



OUR NEW

Boiler Catalogue

NOW READY.

A postal card request
will secure a copy...

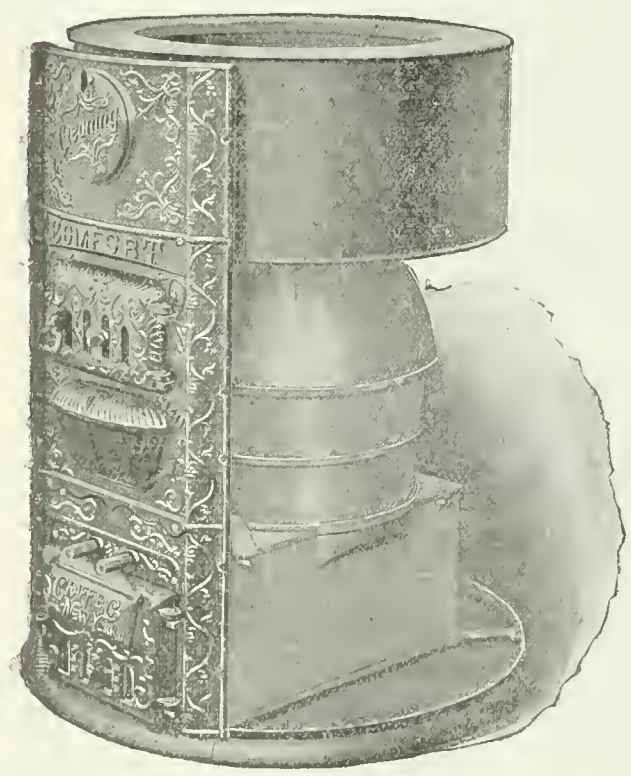
AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,

CHICAGO.

New York, Philadelphia, Buffalo, St. Louis, Minneapolis and Denver.

What Shall the Harvest Be?



Faultless Furnaces.
Hero Furnaces.
Rival Furnaces.
Comfort Furnaces.

This is the furnace dealer's question as the Fall season opens. The outlook for furnace business is bright. It might look brighter for YOU if you had a better or more varied line of up-to-date furnaces.

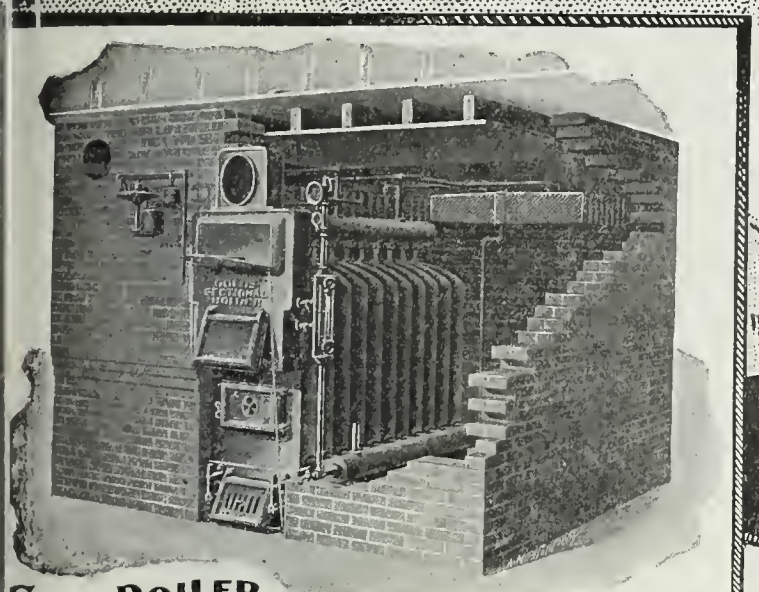
We can offer you SEVERAL STYLES and GRADES at ATTRACTIVE PRICES. Furnaces that LOOK WELL, WEAR WELL, SELL WELL.

SEND FOR CATALOGUE AND PRICES.

THE GRAFF FURNACE CO.,
208 Water Street, NEW YORK.

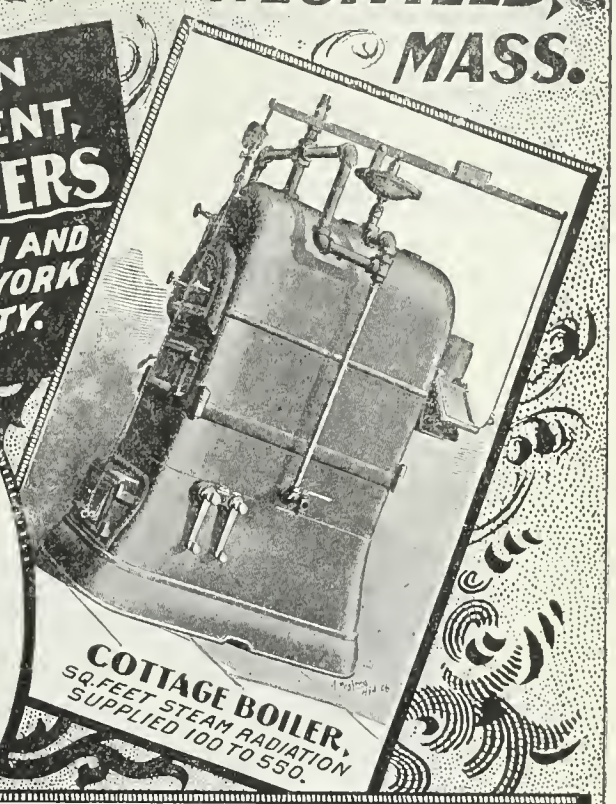
THE H.B. SMITH CO.

WESTFIELD, MASS.



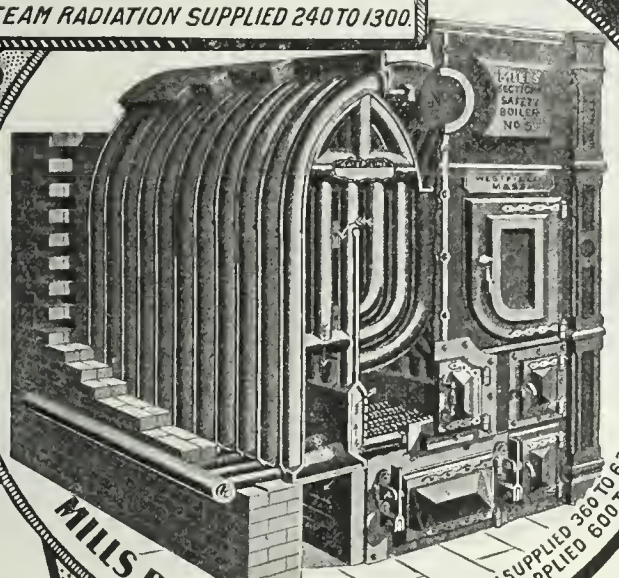
GOLD BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

EUROPEAN AGENT,
AUG. EGGERS
BREMEN AND NEW YORK CITY.

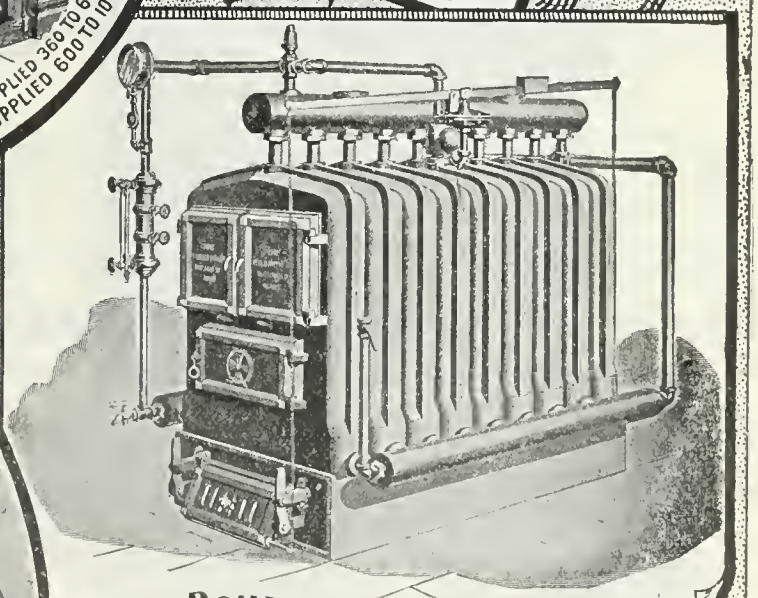


COTTAGE BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 100 TO 550.

PACIFIC COAST AGENTS,
DUGAN BROS.
SAN FRANCISCO CAL.

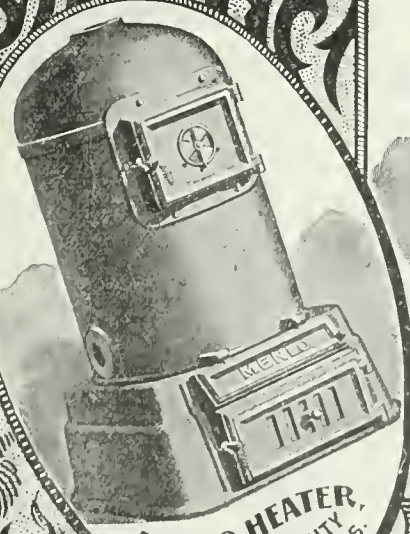


MILLS BOILER, SQ. FEET STEAM RADIATION SUPPLIED 360 TO 6250.
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.

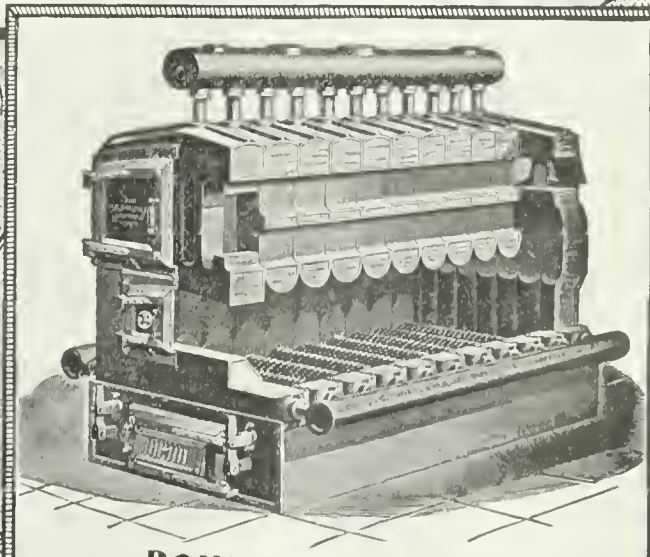
COTTAGE BOILER,
SQ. FEET WATER RADIATION SUPPLIED 150 TO 1000.



MENLO HEATER,
TANK CAPACITY 100 TO 180 GALLONS.

Western Agents
WESTERN BRASS MFG CO.
ST. LOUIS, MO.

SALESROOMS:
133 CENTRE ST., NEW YORK CITY.
510 ARCH ST., PHILADELPHIA, PA.



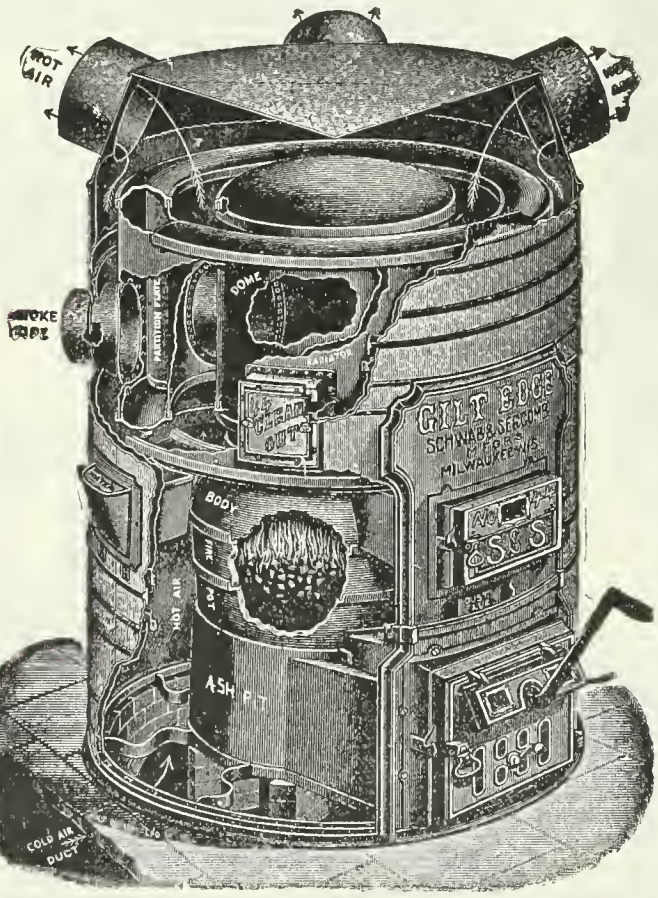
MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.

We get ten times as many inquiries as we ever expected to get when we commenced to use THE METAL WORKER

A good many dealers didn't know there was any money in the Furnace Business until they began to sell the **"DIGHTON."**

The **"DIGHTON"** Furnace is an excellent article at an extremely low price, a better and more economical heater, and fully as durable, as other good Furnaces which cost the dealer twice as much money.

DIGHTON FURNACE CO., Taunton, Mass.



Gilt Edge Warm Air

AND

Combination Heaters

are leaders embodying points of furnace excellence possessed by no other furnaces. A large variety of sizes and styles, each especially adapted for a certain class of fuel. We are manufacturers of a complete line of warm air registers, safety pipe and tin galvanized iron furnace fittings.

R. J. Schwab & Sons Co.,

MILWAUKEE, WIS.

KEEP UP WITH THE PROCESSION.

CONTRACTORS USING OUR BOILERS

Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

If this interests you drop us a line and receive our NEW Catalogues and Prices.

KEWANEE BOILER COMPANY

Home Office and Factory,

Chicago Store, 169 Lake St.

KEWANEE, ILLINOIS.

YOU

will be interested in our new *FURNACE CATALOGUE.* It illustrates our very Extensive line of *SUPERIOR* Furnaces and *UTICA* Heaters —*ELEVEN* (11) *STYLES—FORTY-SIX* (46) *SIZES.*

CATALOGUE AND PRICES UPON APPLICATION. DON'T HESITATE.

Utica Heater Co.,

UTICA, N. Y.

CHICAGO HEATER & SUPPLY CO.,
Western Managers,
54 DEARBORN ST., CHICAGO.

Gurney

HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES *and* STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

GURNEY AND COMPANY
WASHINGTON, HANOVER AND ELM STREETS
BOSTON, - MASSACHUSETTS

Schaffer's Combination Gas and Coal Furnace.

The Most Economical and Durable Gas Furnace On the Market.

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ARE EFFECTIVE IN ALL KINDS OF WEATHER.

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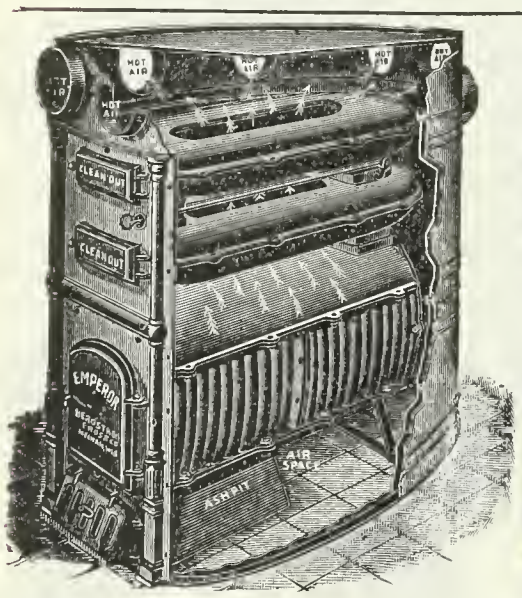

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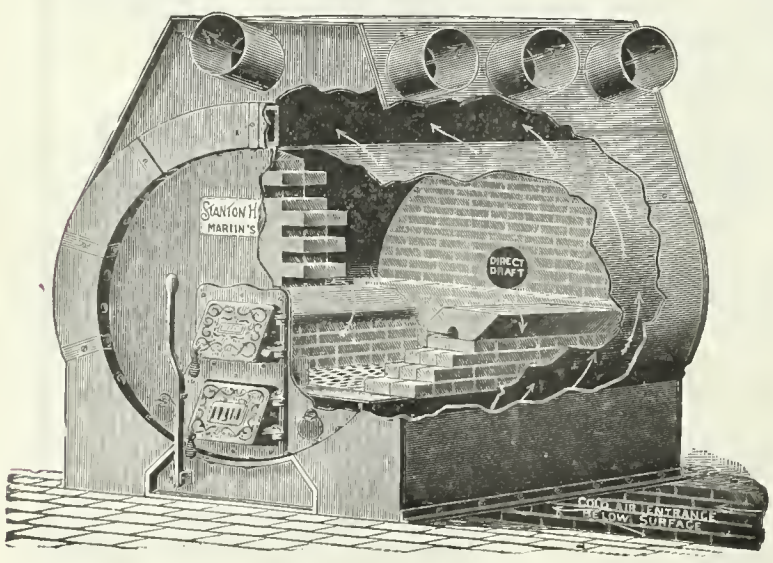

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Yours very truly
ROBINSON-HUGHES & CO.

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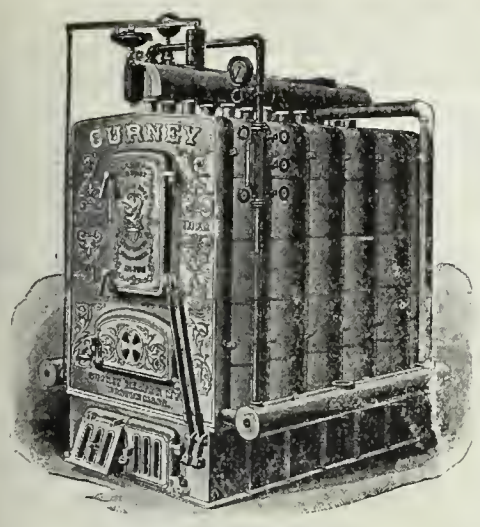

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Nothing Equal to It.

It was Goethe, you recollect, who declared that "to find some one who thinks as I do strengthens my belief." Well, here's what one individual who has thoroughly tested the

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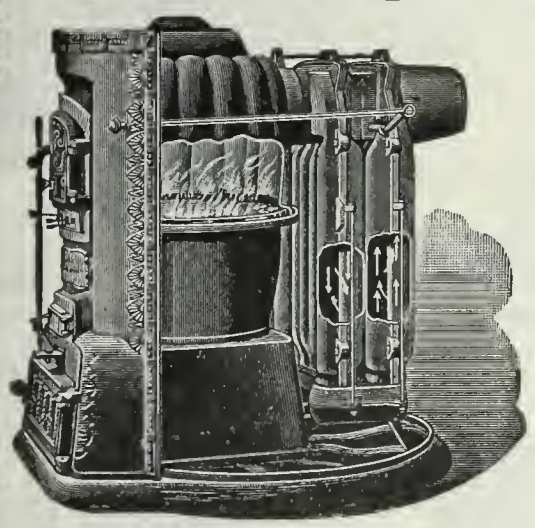

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ALL CAST IRON.

BENGALS do the work. Save fuel, satisfy the customer and make dollars for the dealer.

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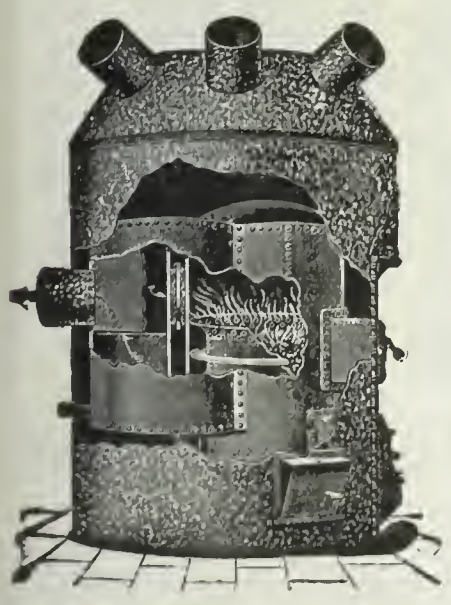

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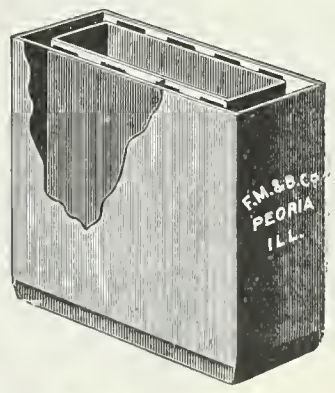

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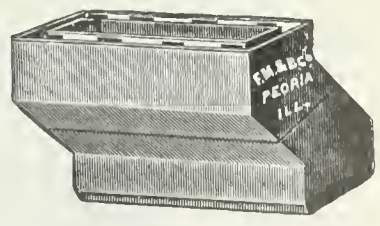

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No Joints Inside to Leak.

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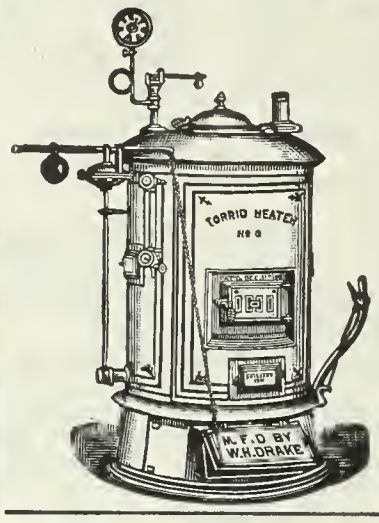
FOR STEAM OR HOT WATER



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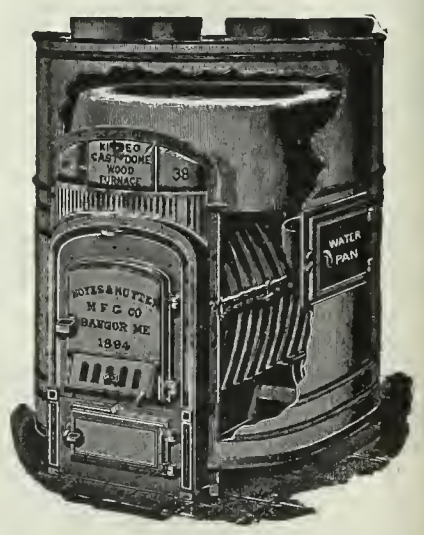

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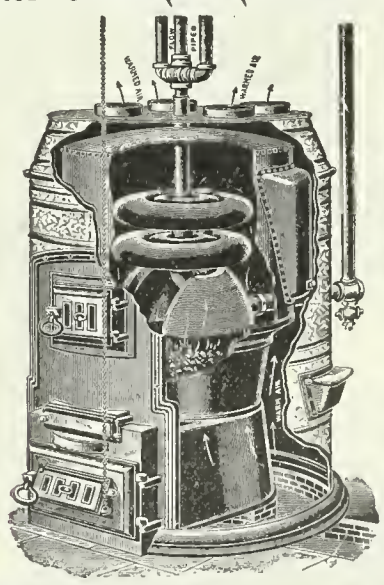
They Fit Any Furnace.



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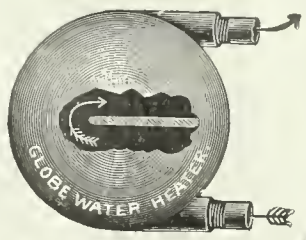
Attached to any Furnace will heat water for domestic use.



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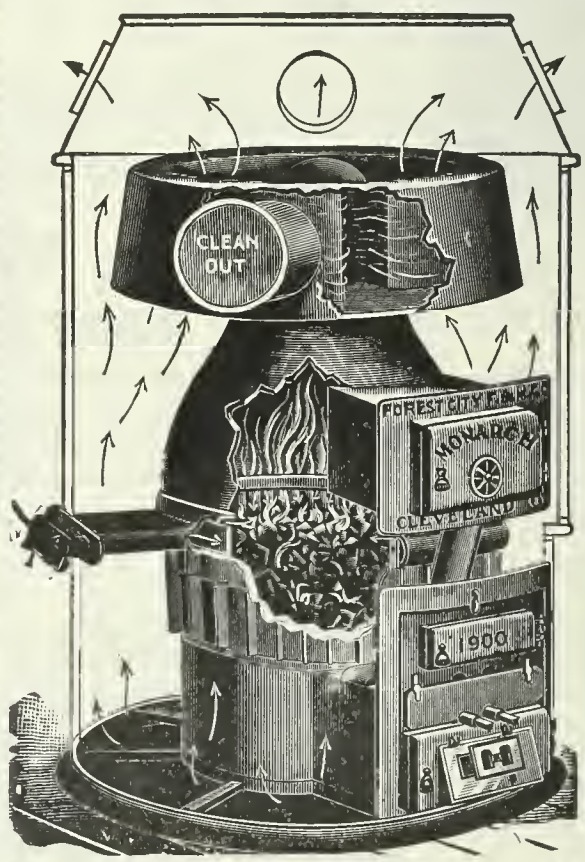

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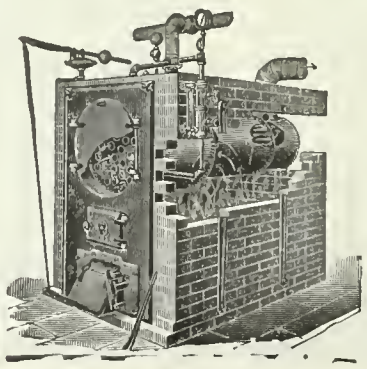

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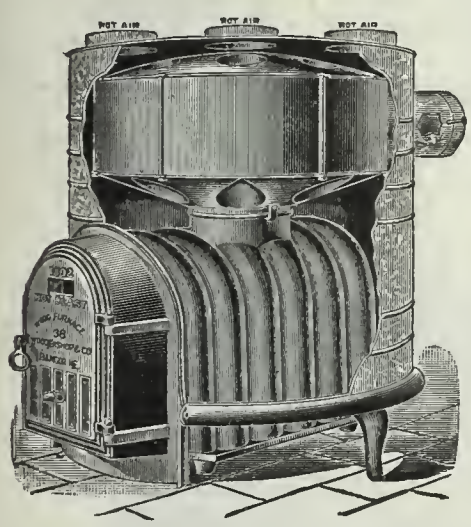

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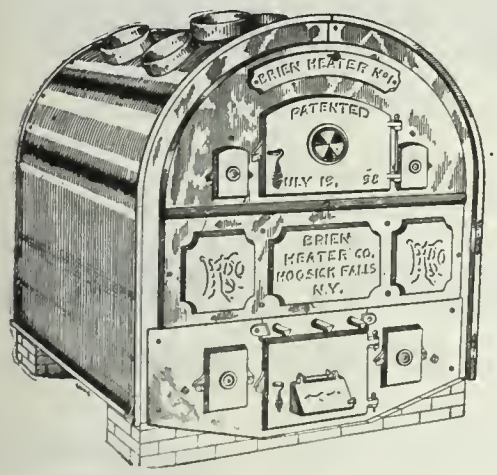

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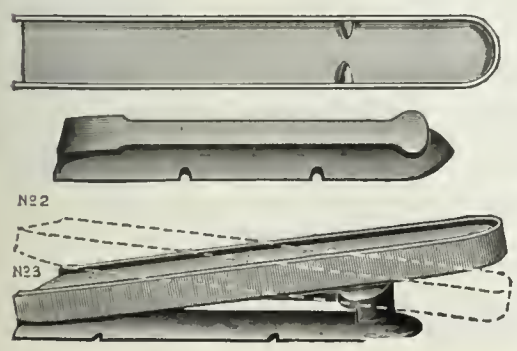

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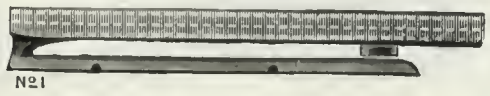

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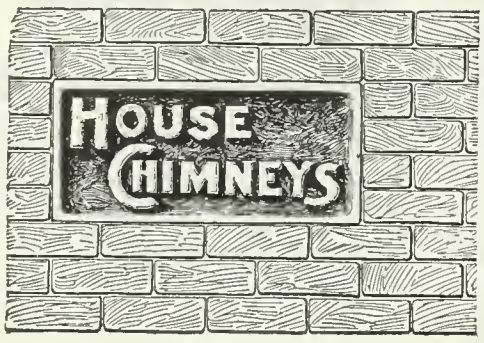

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This article presents information resulting from a wide, practical experience of the writer, and gives sound advice on some of the details of chimney construction.

HOW TO IMPROVE A WEAK CHIMNEY 36–40

VARIOUS FORMS OF VENTILATORS or CHIMNEY TOPS 41–45

CONDENSATION IN STOVE PIPES 46, 47

SMOKE PIPE FOR WOOD FURNACES 48

REMEDYING DOWN DRAFT IN CHIMNEY 49–51

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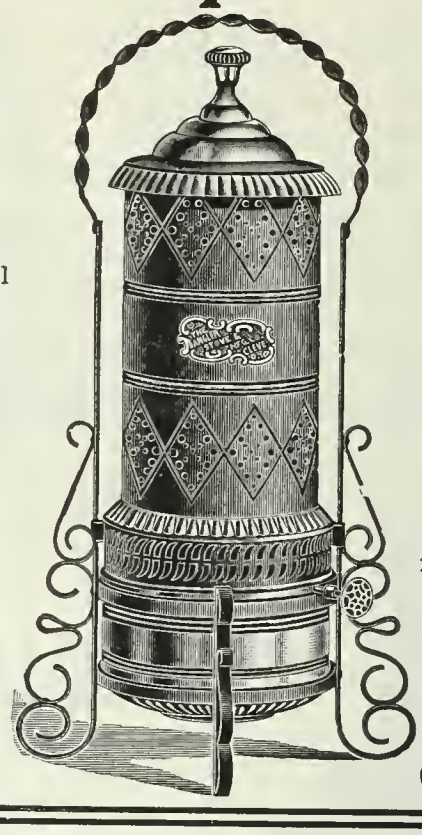

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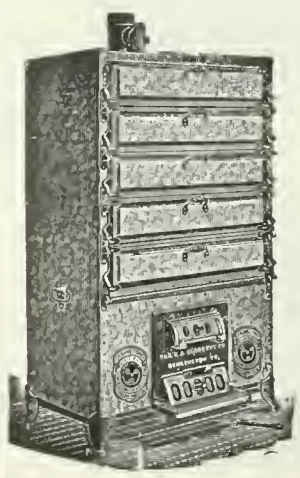

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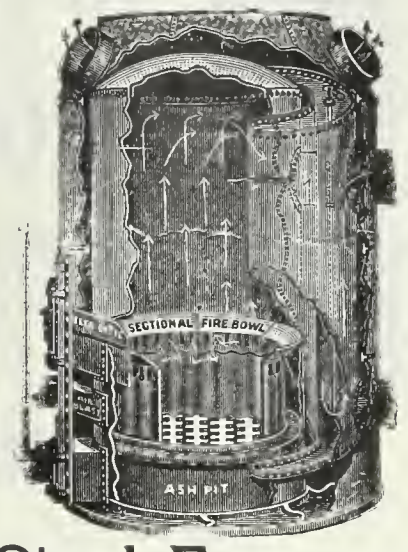

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The Roaster that is used by the most prominent chefs in the world is good enough for anybody. This is the

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The bottom is oval, seamless and raised off the oven. This makes it self-basting, easy to clean, and impossible to burn or dry up the meat.

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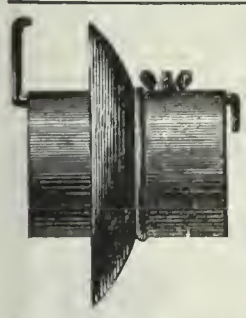

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Is made 9⅛ inches long, each joint is ready, fitted with fastening device, and beautifully designed gilded collar, which measures 10⅛ inches in diameter for the six inch pipe, and 11⅛ inches in diameter for the seven inch pipe. Is sold with a gnarantee that it will hold the stove pipe firm to the fine, and at the same time the pipe will not go in flue over 4 inches. Is absolutely tight and will not come loose. They are packed a half dozen, complete, to each crate.

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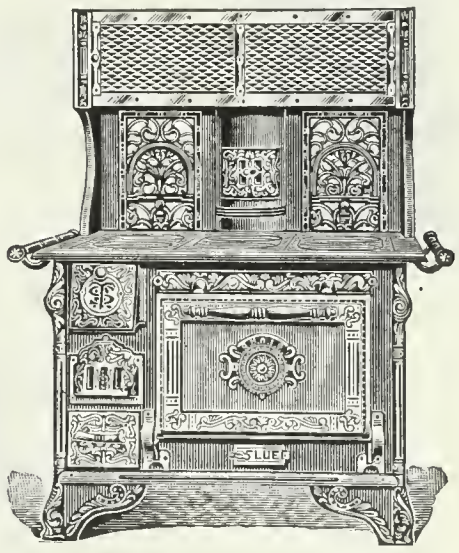

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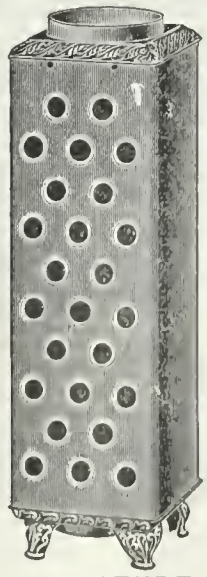

has a room to heat, but does not want to buy a stove

A sure winner in such a case is an

Independent Square Stove Pipe Radiator.

Set it up, connect to a stove pipe, leave it alone—that's all Let us post you.

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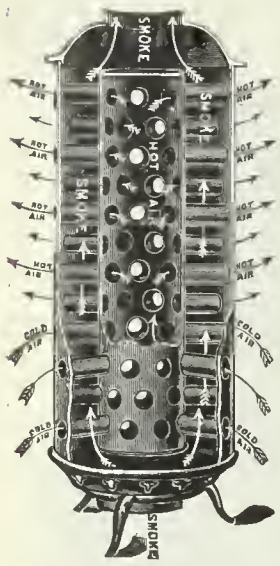

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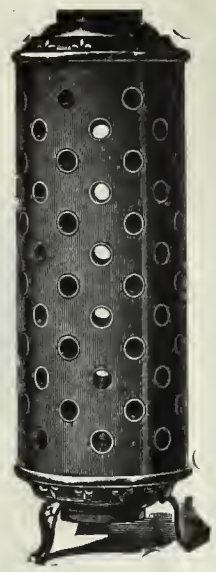

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How often success in man or goods is ascribed to "luck." We all know better. Intelligence, ability, diligence and merit make for success and not for failure. Do you suppose the "WINCHESTER" steam or water heater would have proved the success it has if it were merely "lucky"? Made by Smith & Thayer Co., Boston, Mass.

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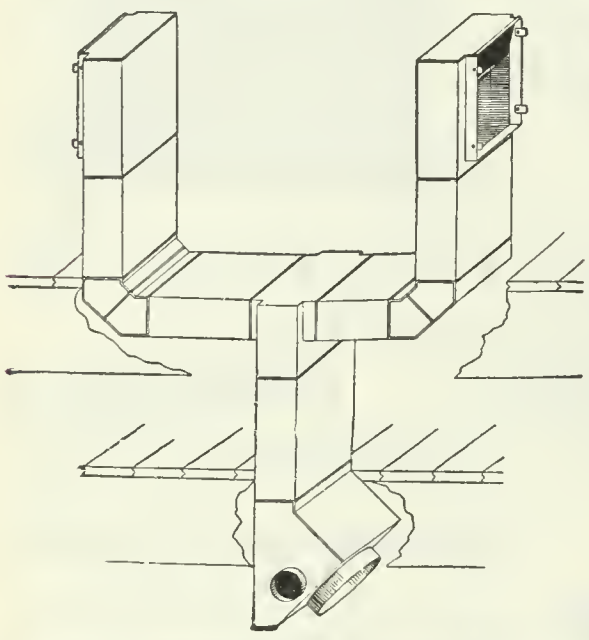

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to keep in touch with the prices now ruling on Hot Air wall Pipes. WE MAKE THEM and can tell you about it, if you'll counsel with us a little. Our catalogue and price-list can be had for the asking and may save you dollars.

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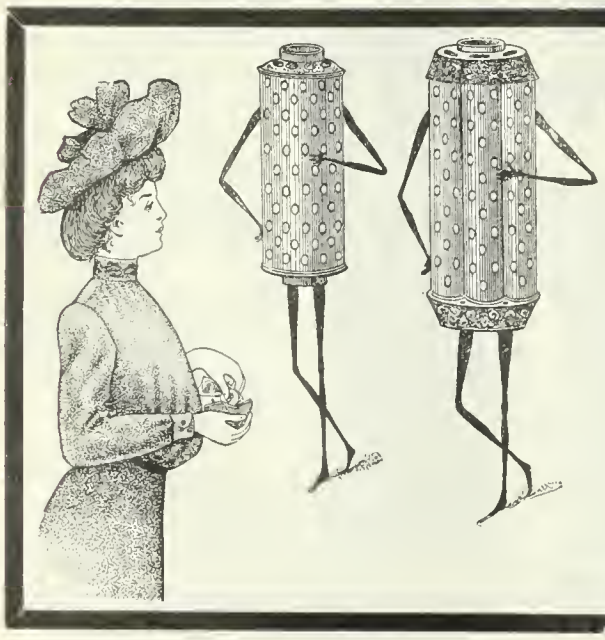

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Stoves AND Ranges.

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I visited the great Pan-American, its wonderful Electrical, Machinery and Manufacturers' Display, likewise its Midway, but I am convinced it pays in a business way to visit the great State Fair and your Exhibit of

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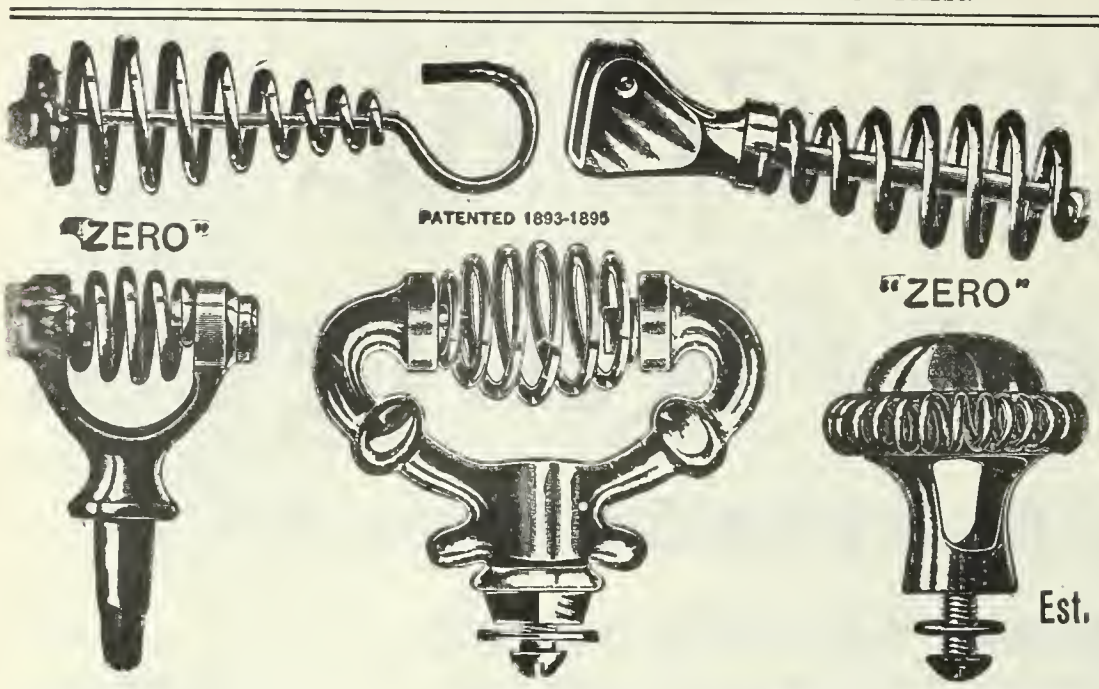

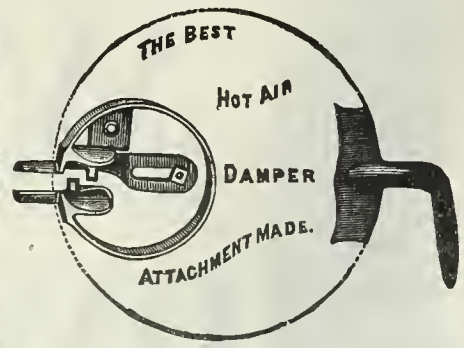

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Your jobber can furnish the goods.

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Largest and Best Stock. Special Stock of Water Fronts, Thoroughly Fitted and Tested.

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Duplicate Postals, Order Blanks, Stamped Envelopes, Catalogues furnished upon application.

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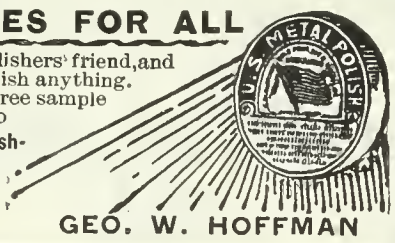
It is the polishers' friend, and will polish anything. Write for free sample to 297 E. Washington St., Ind'p'l's, Ind.



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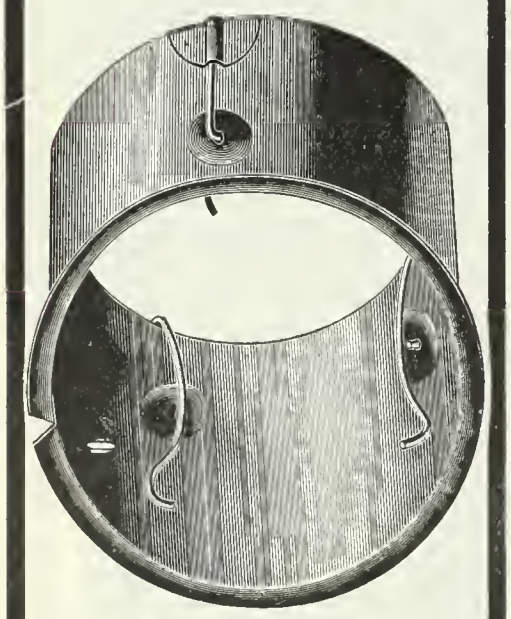

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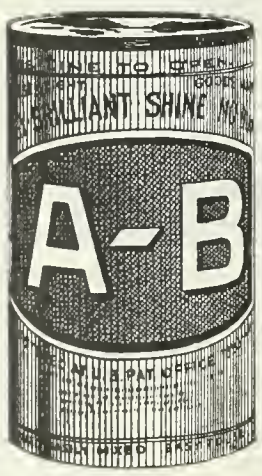

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Sole Manufacturers and Patentees of A-B Stove Polish.

Office and Works, 14 Haddon Ave.,

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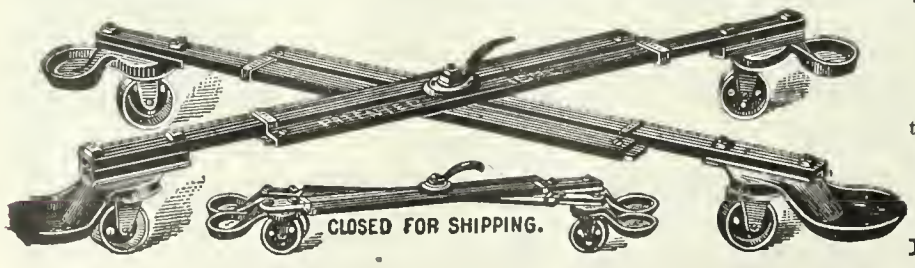
The Model Stove Truck is out of sight when under a stove.



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Stove Repairs for Spicer and Barstow

goods can be obtained from us at a decided advantage. We use the original patterns and guarantee prompt attention and low prices; also a full line of repairs for all New England makes in stock.

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will make money and save money by using

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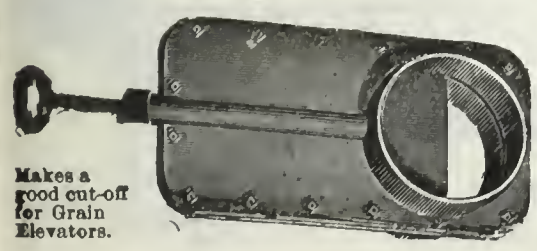

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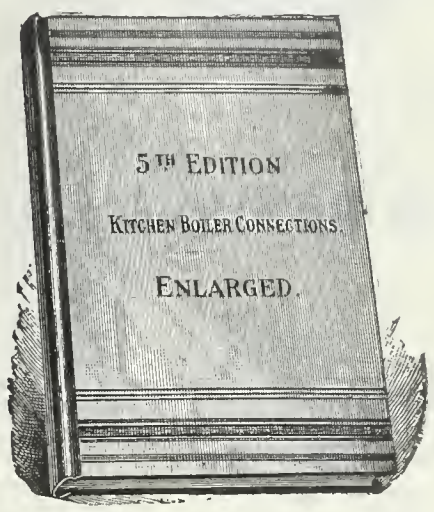

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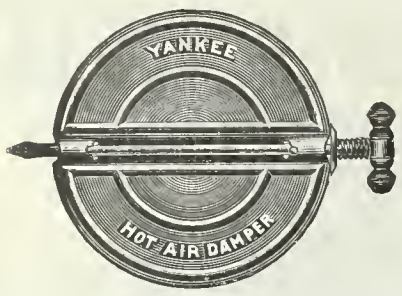

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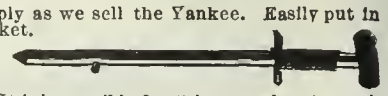

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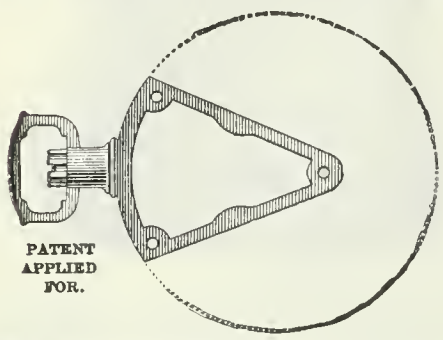

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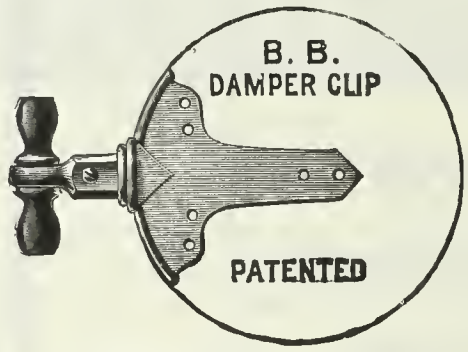

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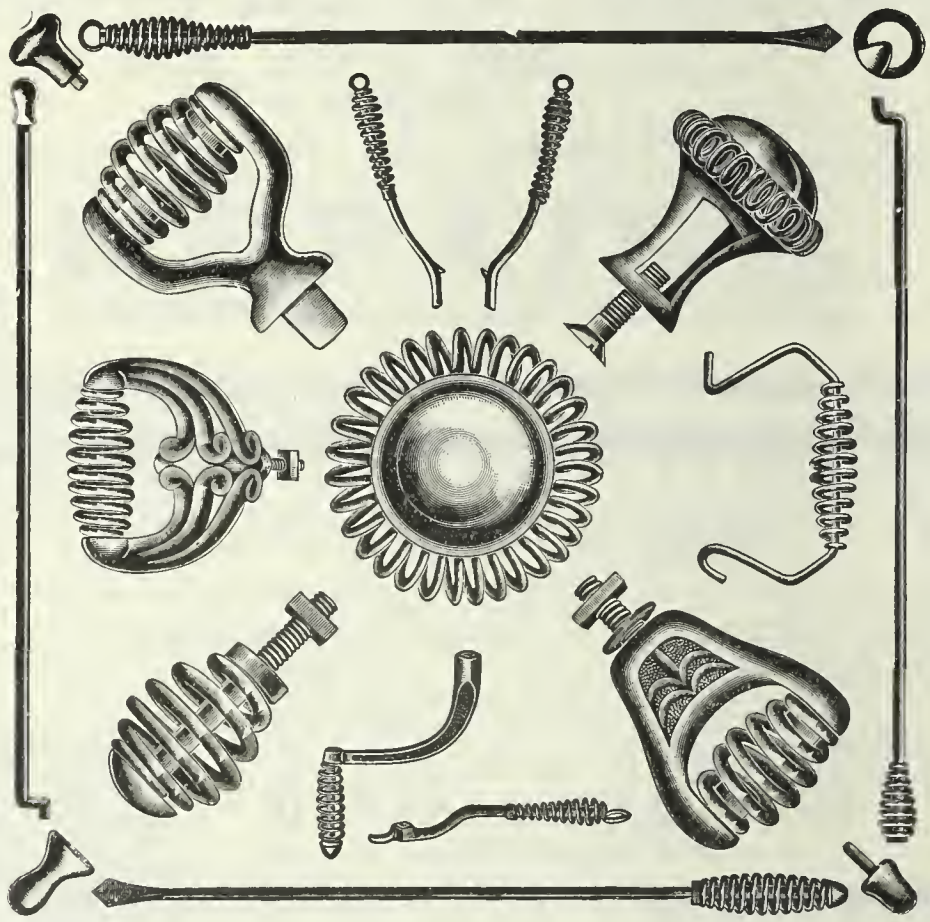

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Herringbone, A. Moleskin, B. Common Tick, C.

3½ x 3 and smaller.

15c. 20c. 10c.

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Can be adjusted both vertically and laterally.

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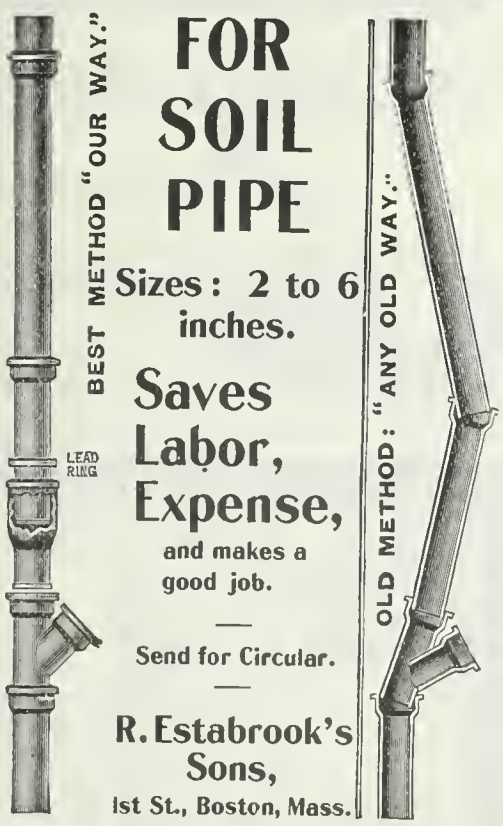

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This PIPE WRENCH is drop forged and built for hard usage. Does not crush, slip, or lock. All parts interchangeable. Send for catalog showing complete line.

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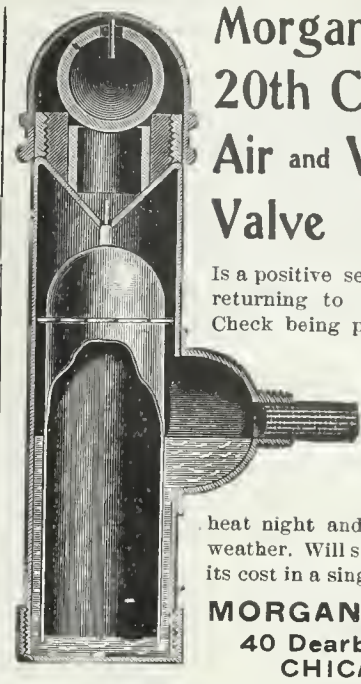

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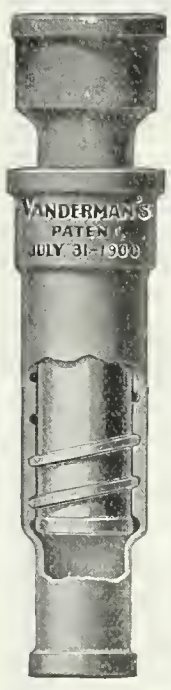

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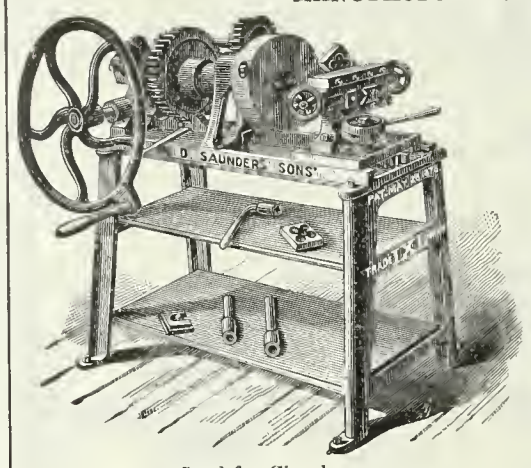

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Pipe Cutting and Threading Machine.

Beware of imitations. None genuine without our Trade-Mark and Name.

STEAM AND GAS FITTERS' HAND TOOLS.

Also Patent Wheel Pipe Cutters.

AS SHOWN BY THE CUT.

Pipe Cutting and Threading Machines for Pipe Mill Use a Specialty.

27 Atherton St., Yonkers, N. Y.

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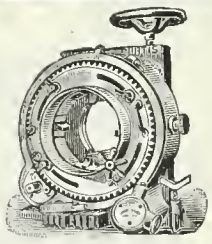

And one man can, with ease, Cut off and thread a 12-inch pipe. Smaller sizes proportionately easy.

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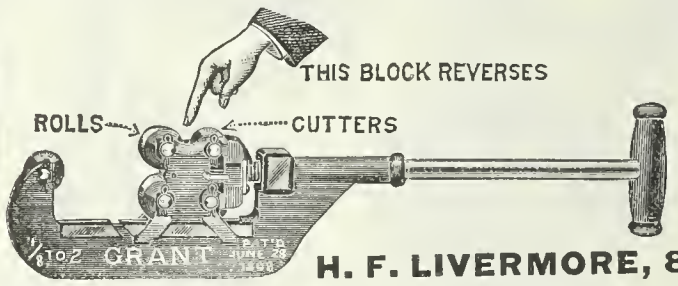
56 Garden Street, **BRIDGEPORT, CONN.**

THE GRANT CHANGE PIPE CUTTER.



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CUTS FROM ⅛ TO 2 IN.

Cuts with 3 cutter wheels, or with 1 cutter wheel and 2 rolls.

Changes Instantly.

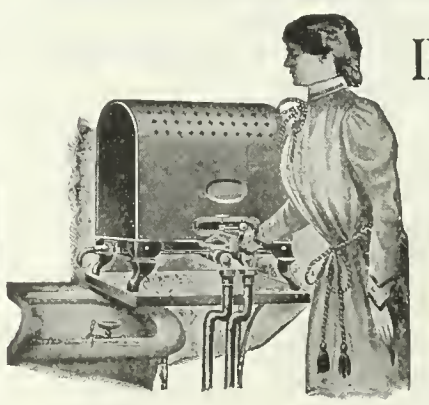
Strong, light and simple.
Nothing to get out of order.

H. F. LIVERMORE, 81 Pearl St., Boston.

GEM GASOLINE SOLDERING FURNACES

are ready for use, possessing no offensive odor, no smoke, no noise, simple, powerful, durable, convenient and safe. They stand unrivalled, unexcelled and unequalled in their perfection. Try them.

Burgess Soldering Furnace Co.,
COLUMBUS, O.



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Send for Descriptive Circular, Prices, Discounts, Etc.

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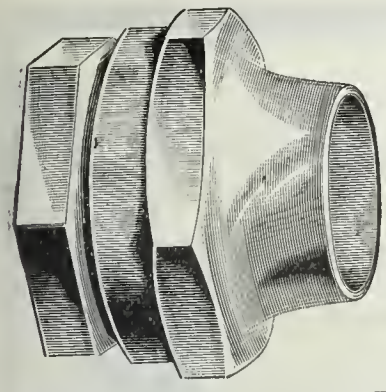

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A Perfect Substitute for Wiped Joints.

WATER BACK, FAUCET, BOILER COUPLINGS, ETC.

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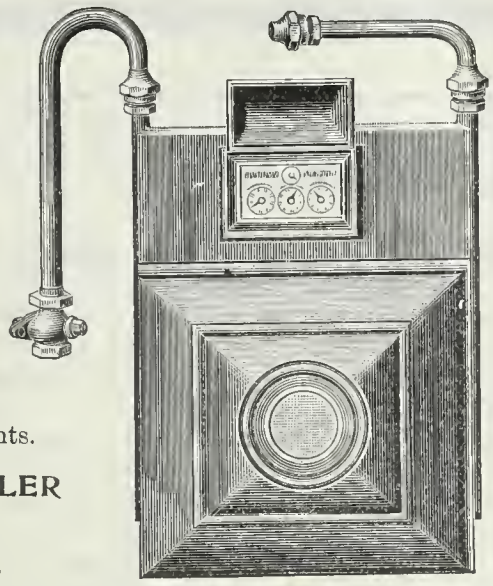
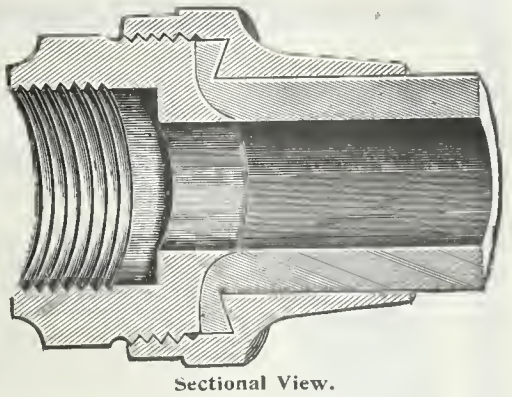




Sectional View.

All Gas Companies that use lead pipe, lead to lead or lead to iron, can save time and money by using the "NOVELTY FITTINGS" in setting their meters and for other purposes.

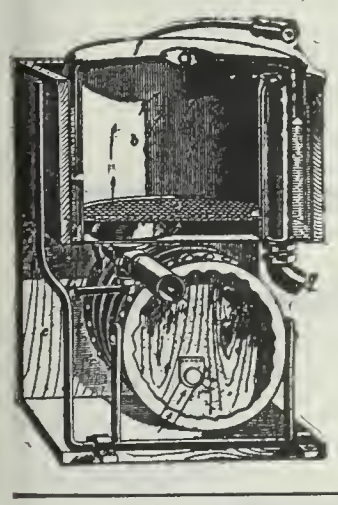
THE NEW HAVEN NOVELTY MACHINE CO., New Haven, Conn., U. S. A.

WHY YOU SHOULD USE A No. 5 FIRE POT.

$4.50 Net.

It is light, strong, and can be easily carried.
It produces a strong, blue flame which is intensely hot and free from smoke. The flame can be regulated as the user desires.
A kettle of metal and a pair of coppers may be heated at the same time.
The burner hangs on a swivel joint and can be pointed up or down.
The top section may be removed, exposing **the open fire, which can be used as a torch.** The flame then may be applied direct to the point where heat is desired. It is unequalled in thawing frozen pipes, taking soil pipes apart, making overhead or upright joints, flowing bath plugs, or any similar work.
There are many other advantages which will suggest themselves to you.
It requires but little gasoline to do a large amount of work and will save you its cost in the saving of gasoline alone in a short time. When you buy, get the best there is. If it bears our name it means your money back if you are not pleased.
Jobbers sell at factory price, or we ship direct on receipt of $4.50.

CLAYTON & LAMBERT MFG. CO., Detroit, Mich., U. S. A.



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For Testing Plumbing.

WRITE US FOR BOOKLET AND PRICE.

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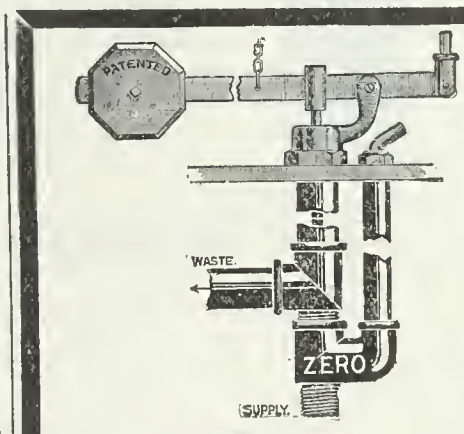

SAVE HALF

The expense of installing closets by getting

Zero Anti-Freezing Valves.

They can be put in with half the time and half the labor because they do not require a pit or vault.

They are simple and durable in construction—made without screws, springs or pins.

Zero Valve & Brass Mfg. Co.,
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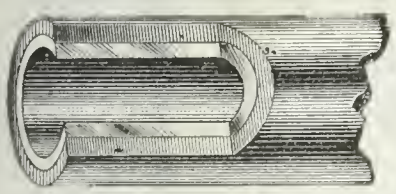
TIN LINED IRON PIPE.

Avoid, without extra expense, all danger of lead or brass poisoning.



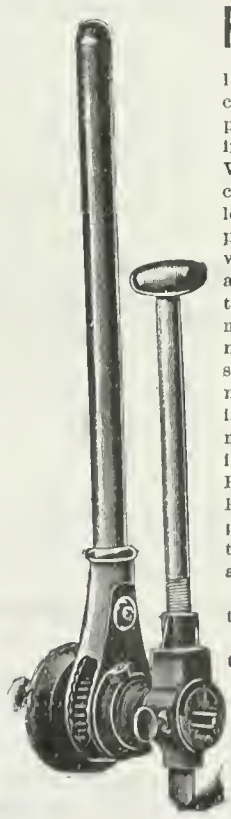
This lining cannot be torn from the pipe.

LAMB & RITCHIE,
Cambridge, Mass., U. S. A.

LEAD LINED IRON PIPE.

The Climax

RATCHET STOCK



Is an indispensable tool for conveniently threading iron pipe in ditches, under floors, in corners, over head, etc With this tool threads can be cut without removing whole lengths of pipe. This tool is provided with a strong vise which securely grips the pipe and by means of the leading thread the die is forced on pipe and the thread is cut. It is made of malleable iron and steel, and while light in weight, making it convenient to carry, is very strong and rigid. The advantages of this tool make it absolutely indispensable to Plumbers, Steam and Gas Pipe Fitters, Gas and Water Companies, Machinists, etc. It takes standard size dies, which are extra if furnished.

No. 1 threads ¼ to 1 in. pipe, takes 2 or 2½ in. die, $10.00.

No. 2 threads 1 to 2 in. pipe takes 2½, 3 and 4 in. die, $17.00

For sale by leading jobbers

Manufactured Solely by

C. M. Kemp Mfg. Co.,
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FOSTER'S NevRleK

BALL COCK.

Positive, Noiseless. Saves Water.

F. W. FOSTER MFG. CO.,
12 Portland St., Boston.

GALVANIZED STEEL and WOOD TANKS.

All sizes and shapes.

J. H. EDWARDS,
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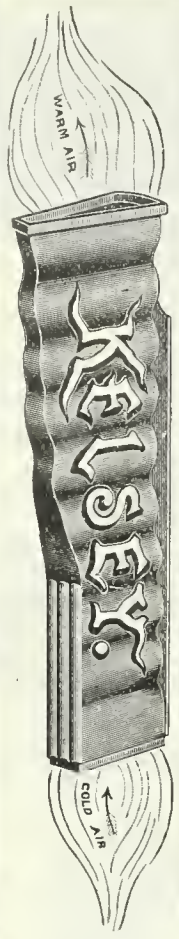

The Kelsey Warm Air Generator

Study the construction of the Kelsey and the principle employed in warming the air, and you will be convinced of its efficiency.

In the Kelsey the air is warmed thoroughly and evenly by passing in separate channels through the cast iron sections.

There are from nine to seventeen of these sections in a Generator, according to its size.

Each section weighs about 70 pounds, and has 8 square feet of heating surface.

These immense surfaces and this great weight of cast iron, being in direct contact with and over the fire, are kept heated to any required degree, with a most economical consumption of fuel.

The Kelsey Method of Warming the Air Is the Best Method. ***Send for Booklet.***

Kelsey Furnace Co., Makers,

MAIN OFFICE,
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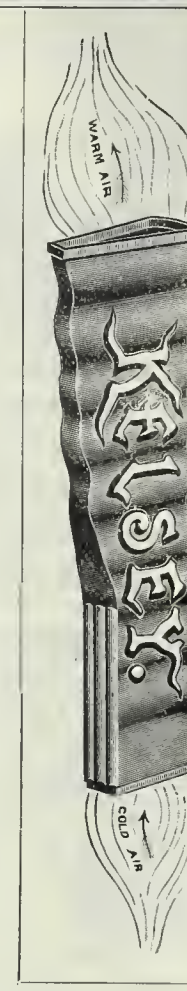
JAMES SMART MFG. CO.,
Brockville, Ont.,
Sole Manufacturers for Canada.

COOK & VAN EVERA CO.,
38-40 E Lake St., Chicago, Ill,
Western Selling Agents.



Brilliant Enameled Steel Ware

This ware is now manufactured by our factory at Bellaire in the Brown Color only, same having been discontinued in all colors by our Portland, Conn. factory. Particular effort is being made to turn out a highly satisfactory and pleasing article, and all dealers are requested to order a sample lot to be convinced of the merit of this ware.

White and White Enameled Steel Ware

This ware will also be made by our Bellaire Factory only hereafter having been discontinued by the Portland Factory. A large line of hospital goods made in this ware Recommended where sanitary qualities are essential.

National Enameling & Stamping Co.

BRANCH OFFICES New York Baltimore Chicago St. Louis Milwaukee ADDRESS OFFICE NEAREST YOUR LOCATION

THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, September 7, 1901.

DAVID WILLIAMS COMPANY, - - PUBLISHERS.

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PITTSBURGH.....Room 509 Hamilton Building.
CHICAGO.....1205 Fisher Building.
CINCINNATI.....Rooms 22-24 Pickering Building.
ST. LOUIS.....1205 Chemical Building.
CLEVELAND.....312 The Cuyahoga.
LONDON.....Hastings House, Norfolk St., Strand.

Volume LVI.....No. 10
Index to Reading Matter.....Page 58

The Opening of Fall Trade.

The summer months, now past, were marked by some influences which had a tendency to disturb trade and restrict its volume. The exceptional severity of the heat was widely felt, and the injury to agricultural products through the long continued drought awakened apprehension as to the effect upon business of a partial failure of crops. There was the beginning of a labor contest, upon the result of which much depended in connection with the permanent prosperity of manufacturing interests. These influences temporarily interfered with business to some extent. The market now, however, is not seriously troubled by any of them, and the fall opens with very satisfactory conditions and prospects of large business. Notwithstanding the damage done in some sections to agricultural products, the farmers of the country have to rejoice in an exceptionally good season, the excellent prices which are ruling more than making up for any shortage in the crops. The steel strike seems to be nearing its end, with the prospect of early resumption of production in the mills which have been closed, thus relieving the market of any scarcity, which is beginning to be troublesome. Meanwhile, the general conditions are exceedingly favorable. The railroads are doing a large and profitable business. Trade in general, not only in the lines with which we have especially to do, is active, and conditions are full of promise. In hardware and metals there is a good volume of busines, the trade buying liberally. The tone of prices is decidedly firm, and nearly all the changes which are occurring are in the direction of higher values. This is illustrated in the advanced prices ruling for bars, wrought pipe, heavy hinges, poultry netting, cut nails, chain, sheets, tin plate, &c. Manufacturers are conservative about accepting orders for future delivery. The scarcity of material has caused much inconvenience, and is the reason for many of the advances which have taken place. When this difficulty is removed, which it is anticipated will be soon, prices will naturally feel the effect and may recede a little. The large volume of business and the possibility that it may be difficult to obtain goods in several lines are looked upon by the trade as influences which will tend to keep the market steady and firm.

Improving the Opportunity.

Under the very favorable conditions under which the fall business opens it is no time for the trade to be indifferent or listless. Merchants and manufacturers alike are confronted by opportunities of which they should make the most. Earnest and enterprising effort should be put forth to secure for themselves a proper share of profit from the prevailing prosperity. It is possible for many in the trade, whether in high places or low, to do a larger and more profitable business. There is a large amount of money which will be spent somewhere. It is the privilege of our readers to see that a fair share of it is spent in their stores, or shops, or factories. The opening of the fall season is an admirable time for business men to review the situation, especially their own methods and enterprises. They should recognize the danger there is confronting every business house, that things will run along in a rut, when much would be gained by even minor changes in the way the business is conducted. There are very few manufacturing or mercantile concerns in which alertness and enterprise will not be able to suggest improvements which would result in increasing the volume and the profit of the business. The chances are that the readers of these lines, if in business for themselves, could, by the exercise of thought and energy, materially extend their trade and make more satisfactory balance sheets at the end of the year. But while there are changes which should be made in store or factory, the adoption of correct and careful business methods, a more persevering and perhaps aggressive going after trade, and in many ways an increasing energy in conquering success, the danger is that things will run along on the old lines, with the familiar story of wasted opportunities, with only a limited where there might have been a large success. Some will, however, recognize the wisdom of putting more thought and more energy into the business, and make in these opening days of the fall a new effort to correct the faults of the past and make the most of the opportunities presented by the very favorable conditions which are prevailing. As a result their business will be prosecuted with vigor and enterprise, which will tend to give it an ample measure of success.

Incorporation of Labor Unions.

One effect of the steel strike has been to revive the subject of the incorporation of trades unions. It is reported, on what seems to be good authority, that the great industrial interests with which J. Pierpont Morgan is identified will in future enter into no negotiations with labor leaders unless the latter can show that they represent an incorporated union that can give satisfactory guarantees for the faithful performance of its contract obligations. The contention that, under present circumstances, labor unions, as unincorporated bodies, are lacking in responsibility, is borne out in the case of the Amalgamated Association. On the one side of the present struggle is a great industrial corporation, whose responsibility is unquestionable and who can be kept closely to their contracts, and on the other a body of men voluntarily acting together, without legal or financial basis of responsibility, and from whom no damages can be secured for breaches of contract. In other words, responsibility is opposed by irresponsibility. When the tremendous interests involved in the present contest are considered, it is but natural that those who, by reason of their corporate character, could not evade their contract obligations if they would, should demand

that the parties opposed to them be placed under similar responsibility. The incorporation of labor unions would, after all, give them a standing and dignity which would impart a new importance to the whole labor movement. And this view is held by many of the more thoughtful and broad minded among the wage earners, who see that the best interests of labor would be more satisfactorily served if their unions assumed the dignity of incorporation. The only apparent argument against such a course is one that would be unworthy of honest men—viz., that incorporation would deprive them of the liberty to violate their contract obligations.

Profit Sharing in England.

The plan of profit sharing is regarded by many as offering the best solution of the problem of the proper relation of capital to labor. It is argued that by giving to employees a direct pecuniary interest in the prosperity of the business with which they are connected, more and better work is secured, a community of interests is established, and a condition of contentment and good feeling is promoted which tends to obviate strikes and other labor troubles. While the system has been practiced with more or less success in this country and abroad by a few scattered concerns for some time past, it is only within the past few years that the movement has assumed any degree of importance. From a statement recently issued by the labor department of the British Board of Trade it appears that there are now seventy-three firms in the United Kingdom who have profit sharing schemes in operation. Of these full returns were received from sixty-six concerns. These returns show that an average bonus of 6.4 per cent. on wages paid was distributed in 1900. The results in the several cases, however, differed widely. Out of the sixty-six cases cited there were thirteen in which no bonus was given, while, on the other hand, there were two instances in which as much as 41 and 39 per cent. respectively was paid. In the large majority of instances the bonus varied between 5 and 7 per cent. The report mentions seven cases in which the profit sharing system was abandoned, the reasons for failure being mostly of one character—viz., dissatisfaction of the employees when there were no profits to be shared. This seems to point to the conclusion that profit sharing is regarded by many of the employees as a good thing when the business prospers and the bonus comes in regularly. But as soon as adversity overtakes the concern and the would-be profit sharers are asked to assist in making good the debit balance they have no further use for the plan. Nevertheless, it is undeniable that the system has worked well in a number of instances, and it may be that, after all, the profit sharing principle will form an important feature of industrial conditions in the future.

In common with the experience of other tradesmen, the plumbers throughout the country are being seriously affected by the steel strike, owing to the scarcity of some kinds of supplies. It is becoming increasingly difficult to get certain lines of goods, especially pipe and bathtubs. In consequence of this stringency a number of plumbing jobs contracted for some time since have had to be reconsidered and finished in a different manner, owing to the impossibility of obtaining the material laid down in the specifications. With the continuance of the strike these conditions will become still more pronounced, and both plumbers and their customers are liable to suffer great inconvenience from lack of material wherewith to complete jobs contemplated or already in hand. Moreover, the price of plumbing goods in the lines indicated is rapidly advancing, and jobs are likely to cost anywhere from 25 to 50 per cent. more than would have been the case six months ago. It is probable that a great deal of contemplated work will be laid over or abandoned altogether in consequence of the present scarcity and high prices of materials.

Oil from the Texas wells is being put to a new use in certain parts of that State, where the people are using it instead of water for laying dust on the highways. It is said that it packs the dust closely without making mud, and that on well graded roads it sheds the rain like the roof of a house. Half a barrel per mile is sprinkled each day, and it is used when hot. A similar system is being used in the park roadways in San Francisco with complete success.

Tests of Fire Proof Building Material.

An interesting series of tests of fire proof building material were held last week, under the auspices of the Building Department of New York City, in the yard of the Sanitary Fireproofing Company, East 106th street, near the East River, New York. Nine concerns participated. Each manufacturing concern was required to erect a one-story building, 10 feet 6 inches in width and 15 feet 6 inches in length, on a 3-foot brick foundation, the sides and roof to be of the fire proof material manufactured by the concern, with an iron grate resting upon the foundation and an iron or fire proof door in the front and center of the building. Flues and chimneys were also required. In each of the buildings a fire was to be started and kept going for one hour, showing during that time, or a part of it, a heat of not less than 1700 degrees F. At the lapse of the hour a stream of water at a pressure of 45 pounds was thrown into the building, against the sides, for a period of five minutes, in order to show what effect water would have upon the fire proof partitions after having stood the extreme heat.

The test was under the direction of the engineers of the building departments of the boroughs of Manhattan and Brooklyn. The first building to be tested was one erected by the White Fireproof Construction Company. The fire was started at 10 a.m., and, after going through all the requirements of the test, the building was found to have withstood them, with the exception of a little bulging on one side. The next test was that of the Norman Company building, with almost similar results to the first one. The third was the building of the Metropolitan Company, which was not quite as satisfactory as the others, part of the partition having come down. The fourth test was made on a building erected by H. W. Bell on the Bell system. The showing in this case was good, except a slight bulging of the front partition. The Union Fireproof Construction Company's building was next tested, and was found at the close to be in perfect condition, although the degree of heat at one time exceeded 1900 degrees. The Moslein system, consisting of metal laths plastered on both sides, was next tested on a building erected by Mr. Moslein. The metal laths withstood the heat, but the plaster was forced from the laths by the extreme heat. The Brinkman system, which uses material made of solid terra cotta blocks, was the subject of the succeeding test, and, excepting a slight bulging on one side, the building stood it satisfactorily. The Sanitary Fireproof Company building was also tested with equally satisfactory results. The interior of this building was partly plastered with the plaster of the Platt Company, and, while in other buildings the plaster was almost entirely destroyed, it seemed to be hardly affected by the fire. The ninth and last building to be tested was one erected by Jacob Schratweiser of Brooklyn. The building was constructed of the Schratweiser metal laths, with plaster in and outside the same, and a door of similar construction. The test of this building was satisfactory beyond expectation. It came out of the test absolutely unharmed.

Careful Buying for Plumbers and Metal Workers.

The inquiry of our correspondent whose letter was published in The Metal Worker of August 17 has awakened an unusual amount of interest in the trade. Some of the communications we have received in regard to the care with which plumbers and metal workers should buy their goods are given below. They admirably supplement the interesting collection of letters published in our last issue. It is generally recognized that this is an important subject, especially for the smaller houses, some of whose business methods are not as careful and up to date as they should be:

From a Well-known Ohio Merchant:

In a recent issue *The Metal Worker* printed a letter under the caption of "Careful Buying for Plumbers and Metal Workers" in which a statement was made and questions were asked, which the writer begs to enlarge on and reply to in a general way.

Your subscriber avers he is already doing a nice little business in this line, enough to lay by something each year, also stating that he has never given much attention to the buying of his goods, paying what the houses ask with whom he deals. He is indeed a fortunate man in many respects:

1. That he can buy in this way.
2. That he can sell on a basis of this class of buying.
3. That in buying and selling so his customers allow him to pay expenses, get his living, and still have something left to lay by or invest in an increased stock.

SOME PERTINENT QUESTIONS.

A few questions are perhaps pertinent as to how and why he is enabled to do this:

Is he constantly meeting competition?

Is he on a railroad, cross road or isolated?

Is he within the pale of the catalogue house?

These are asked only because of the fact that an affirmative answer would make it hard to understand how such clever work was possible, in the face of the fact that the most vigorous competition of the present day requires every business, be it large or small, to secure, by any and all legitimate means, the lowest possible prices in its buying. Then the question arises at the end of the year, "Will the business show any profits?"

SOME ANSWERS

I believe the indorsement of nearly every reader will follow these answers. To your correspondent's first question, "Will it pay me to try to get lower prices?" I answer emphatically *yes*.

It pays any merchant to better his position, to add to his income and increase his profit, to know that he is buying lower this time than at his last purchase, to keep up his interest in his business, to take advantage of markets, to secure additional discounts if possible, to face the man of whom he buys with a knowledge of the goods equal to his own, and to know beyond the question of a doubt that he is buying goods lower than, or at least as low as, his enterprising competitor. These are the pleasures of living and working and doing business for many merchants, and without the fight for them the snap and vim of the institution would be gone.

STANDING ADVANCED

By careful buying his standing with jobbers and manufacturers would be advanced very materially rather than the opposite. This is his second question, and will be answered as above by 99 out of every 100 men in business, be it plumbing and metal working, hardware or what not. A good buyer who is honest in his efforts is the admiration of every house and of every man who sells him goods, and his standing is not only bettered with them, but so, too, is his rating and his general basis of credit with the selling community.

It is all right to go on the principle that you can trust the man of whom you buy goods, to a certain length. The salesman will be patient with you and do for you all that he does for others under like circumstances, but will always have in him the hesitating price as to just what to charge you, and the continual wonder that you as a business man are not posted for yourself.

A SUGGESTION TO THE BUYER.

A suggestion that may be somewhat of a lesson is here offered in all good feeling: Take your slip or memorandum of purchase handed you by the salesman, of whom you have just purchased a certain invoice under the old way of buying, and go over it with him again, item by item, with your *Metal Worker* or *Iron Age* at hand, making comparisons and asking for extras where they show or where you think yourself entitled to them. When through sum up the result; see what you have made by the slight effort to find a close market; see if it does not amount to 5 or 7½ or 10 per cent. better all the way through. Then carry it into your year's purchases and find out what per cent. it might be for the entire twelvemonth of your business. You may have surprised the salesman, but if he is a business man you will have increased your standing with him rather than lowered it.

WILL IT PAY?

The question, Will it pay? has been answered pretty fully in what has gone before. In conclusion, it certainly will pay, from every standpoint, to give attention to that on which depends every dollar of your profit. It will pay to add the necessary man spoken of to your force. The time you give to getting right prices, to studying the markets, to knowing the ins and outs of your business, will be more than made up and his time paid for in the results you will secure. The first cost of help is a legitimate expense, which you are more than cutting off at the other end.

This is the day of competition, and competition must be met with competition. Every question as to your business and as to values must be replied to almost on the instant, and replied to intelligently. It is the posted man who secures the contracts; good buying is the lever of the business, good profits the result.

An Indiana Merchant Writes:

Noticing the article which appeared in the last issue of *The Metal Worker* under "Careful Buying for Plumbers and Metal Workers," we would think that if the party who "has a nice little business, and who was able to lay by a little every year," were to employ a young, energetic plumber, who would be intelligent enough and experienced enough to do his buying and send out letters of inquiry to different manufacturers and jobbers, in getting catalogues and price-lists from each of these and keeping them on file and of easy access, entertaining traveling men as they come in, whether desiring to buy goods or not, this party would save enough money on the purchases of his goods to pay the increased expense. Then this same party might be used in soliciting business and keeping the shop and store in good condition, thus increasing the volume of business. We feel certain that this would place the party in better standing with the jobbers and manufacturers, for jobbers and manufacturers

ADMIRE A CLOSE BUYER,

one who is well posted as to the markets and as to values, styles and kinds of articles. Every travelling salesman representing a jobber or manufacturer would rather come in contact with a purchaser who thoroughly understands his business than with one who does not.

The old adage, "Goods well bought are half sold," we find to be very true in many respects; for it is hard to sell an article even at cost if it has not been bought right, and, on the other hand, it is easy to sell an article at a profit if it has been bought right. We find that in watching closely the values of different articles and making purchases right we keep the jobber and the manufacturer posted, and in turn are helping them by being more careful in buying. We cannot see that it would bring one into disfavor with the manufacturer or jobber, for it benefits them as well as the purchaser. Moreover, these are times when it is policy to purchase as closely as possible, for there is no question but that

values have reached their limit and sooner or later must commence to decline. If goods are well bought now they will not show so great a loss if there be a decline in the market. This might not be of much benefit to a very small buyer, but we think that it can be applied to buyers of all sizes and classes.

A New Hampshire Dealer Says:

The subject of close buying is a very important one to me, for I must buy to meet close competition. As a rule I have chosen to deal with good firms who stand behind their goods, and at times I find my neighbors have bought to make a profit and so force me to sell at cost or keep my goods. To illustrate: I sent to a good house with whom I have done quite some business for some pruners. They came all right, but were billed $31.20 per dozen. I was astonished, and as I could not sell even one at the cost price I started to investigate the different pruners and their prices, and found a better and a stronger one for $9 per dozen, which I could sell easily at a fair profit.

If I buy well the battle is half fought, for I can show the people I am up to date in prices as well as in goods. I buy where I can buy the cheapest in price and not the cheapest grade of goods, for I cannot afford to buy inferior articles.

SUGGESTIVE WINDOW DRESSING.

BY INSPECTOR.

I was a good deal interested in the article by your clever contributor, "Inspiration," in *The Metal Worker* of August 10, which was distinctly inspirational. The scheme of a window dressing for midsummer, intended, like the Probasco fountain in Cincinnati, to exemplify one idea in what the electricians would call its polyphase development, is good. In the instance described it is worked out very cleverly, but the result as shown in the illustration and gathered from the description, is like coal tar. There is nothing disrespectful in this comparison. Coal tar is perhaps the most interesting material known to the adept in analysis and synthesis. It is a hydrocarbon, so rich in hydrogen and carbon atoms to the molecule, that if we can only remove those which are superfluous we have left every hydrocarbon in nature. It contains them all, I believe, just as the block of marble contains any and every form of which the sculptor can conceive. He has only to remove the superfluous stone encasing it to have left anything in the statuary line which it suits him to produce. This explains my meaning in saying that the window dressing of "Inspiration" reminds me of coal tar.

I am very glad to have as good a text for a sermon on window display as the illustration accompanying the article referred to gives me. To my mind it bears about the same relation to really suggestive window dressing that chaos bears to cosmos. By count I find somewhere between 150 and 200 articles shown. My uncertainty on this point is not due to the fact that I cannot count, but because in the case of piles of things a picture on the scale of that referred to leaves something to the imagination, and makes an estimate necessary. I have no doubt that as many as 300 articles were really employed for the purpose—which I venture to say was somewhere about 250 too many. The thought of the decorator was to suggest rest and refreshment under conditions especially attractive to one suffering from the discomforts of a blistering hot day. He failed to do it by the very common and not unnatural mistake of overdoing it. A thirsty man is not appealed to by a stack of water coolers 6 feet high, obviously out of commission and on show. It does not tend to make him think that a lemonade would taste good "just about now" to see a peck of lemons, an assortment of lemon squeezers, a 7-pound box of sugar and all other ingredients and kitchen implements in wholesale quantities, or at least in job lots. If ice cream is the subject of the intended hypnotic suggestion it is somewhat too formidably presented when the means employed include an assortment of freezers ranging from 16 to 1 (quarts). If the idea of fanning as an expedient for the conversion of B. T. units into dynamic force, so to speak, is to be imparted, one fan will do it better than a row of fans hung up like a decoration in a college girl's bedroom. But why particularize? The window dressing under discussion would be useful as establishing the fact that the dealer making it had a large and well assorted stock of merchandise in a certain line which he was desirous of selling. To announce this fact in the proper way makes for good; but I do not conceive that this was the object sought in this instance. If designed to inspire a desire in the mind of the casual passer-by to provide himself with the means of contributing to his hot weather comfort, it was in some degree a failure, since a clearer impression and a more pronounced desire would have resulted from a much simpler arrangement.

For example, if "Inspiration," having conceived the really bright and catchy idea of a "keep cool" window display, had restrained the misguided zeal of his clerks and resolved that he would express the idea in the simplest way possible, he would have suspended the hammock, with a pretty sofa pillow in one end and perhaps a lace scarf carelessly draped in and over it, as if left there for a moment by an absent girl. A table suitable for a porch or arbor would stand in front of it, with just enough furniture in the way of lemonade and fake ice cream to meet the maximum needs of two or perhaps four people. In one corner a water cooler, a bowl of cracked ice, two or three lemons, a claret bottle and whatever else lent itself to the color effect or to the idea sought to be conveyed, would be effective. A fan or two carelessly disposed, as if just laid down, would be useful. The merchandise display should be subordinated to the picture effect, and not one thing should be visible which did not contribute to the *coup d'œil*, or which would be out of place in the position in which one found it. Stiffness and formal order, with everything on one side exactly balanced by something like it on the other side, is fatal to a pleasing and natural effect. Care should be taken to avoid the pre-Raphaelite detail, which leaves nothing to the imagination. Especially should care be taken to avoid a confusion, which is barren of any other suggestion than that a fool buyer has been to the store and bought such a lot of stuff that Mary, the house maid, has not had time since the call of the delivery wagon to put things away, or indeed to find places for them.

"Inspiration's" window arrangement reminds me of a pleasing incident which happened some years ago under my own notice. A friend of mine with ideas of his own which were sometimes right, received a present of an oil painting of considerable merit from one whom he had placed under obligations. It was a landscape representing "the mill by a dam site," with a background of Swiss mountains and a pleasing foreground of the usual conventional character. My friend was greatly pleased, but the more he studied the picture the more it impressed him that it would be greatly improved by the introduction of something to give it human interest. It lacked life. So he took it to an alleged artist of his acquaintance, and asked him to put in a figure or two, human or animal, as he might find most convenient, just to liven it up a bit. This artist was probably one of the window dressing variety in whose school "Inspiration" has studied. He went to work on the picture and soon had it as lively as the most sociable critic could desire. In the immediate foreground he put little groups of people going to or coming from the mill. On the foaming tail race, presumably driving down hill at the rate of 40 miles an hour, was a fleet of stately swans and geese, with a few ducks added for variety. On a bridge crossing the race he put a couple of goats contesting the right of way. A dog on the bank was barking at the goats. On the roof of the mill he painted as many pigeons as it would hold, and filled the circumambient atmosphere with birds of various sizes and colors. In this condition he sent it home, and it has ever since been a source of great joy to the owner's friends. It serves at least to show that a good idea may be carried too far. My esteemed friend, "Inspiration," will no doubt catch my meaning without further elaboration.

Window decorators seem to be afraid of empty spaces. Their fundamental idea is to get into a window all it will hold. This is usually a mistake. Sometimes it works

very well, but only in connection with a fake of some sort. I remember ouce seeing what purported to be gold watches exhibited in a show window by the barrelful. I have also seen jewelry loaded on an ordinary railroad contractor's wheelbarrow for show window purposes. In these instances the quantity, suggestive of cheapness and a distribution on a large scale, was effective. In both instances, however, there was an indefinite multiplication of the unit, and the purpose was to convey the idea that the dealer had millions of them and was making a drive to unload. Even this, however, ceases to be a novelty and attracts only brief attention. The artistic window dresser avoids overcrowding. The eye is not caught and held by an exhibition of reserve stock. I remember seeing in Berlin a store which so fascinated me that I often went some distance out of my way to pass it. The show window was lined with clean white marble and in the middle of the single slab which made its floor was a beautiful dish on which rested in a bed of appropriate garniture a single article, usually a fish. It was so cool and clean and attractive that I was daily tempted to buy what I saw displayed. This is true in every line of business. The windows which attract attention and accomplish their purpose are not the ones which suggest a confused idea of a general assortment of commonplace merchandise, but those which present to the eye a picture easily comprehended at a glance and suggesting a want which cannot be supplied at any time and anywhere. My purpose in writing this is not controversial. "Inspiration" had a first-class idea, and one which can be worked out with advantage. The suggestion is the best hot weather scheme of window dressing for a hardware and house furnishing store I have seen; but he made a mistake of overdoing it, and if he will think the matter over I am sure he will agree with me.

THE PHILADELPHIA STOVE TRADE.

The fall season's trade among the manufacturers of stoves, heaters and ranges in Philadelphia and the Schuylkill Valley district has fairly begun. Although indications point to a late season, it is generally considered that, if the weather conditions are in any way favorable, a large volume of business will be done. Some manufacturers have been more or less handicapped in the production of some lines of their goods for the fall trade by inability to obtain promptly their supplies of raw materials. This has been particularly so in the case of sheet iron and steel, which, owing to the labor difficulties in the Middle West, have been very scarce.

Orders are reported to be as numerous as at this time last season and they are taken about as freely. It is noticeable, however, that deliveries in some cases have been extended to even 30 days later than last year's deliveries, and by parties who are usually said to want early deliveries. As a reason for this one manufacturer says that many of the retailers carried over from last season a larger stock than usual and they desire to move that stock before taking on the new goods.

The various foundries are now quite busy, and numerous general shipments are being made. The local retail trade, however, remains quiet, particularly as far as new goods are concerned, although a large amount of repair work is being done and a good fall season anticipated.

The Monarch Cinderella Heater.

The Pittsburgh Stove & Range Company of Pittsburgh, Pa., for whom W. D. Sager, Chicago, Ill., is Western sales agent, have issued a daintily printed, handsomely illustrated four-page folder, showing the Monarch Cinderella self feeding, base burning, double heater for hard coal. The design is such as to at once attract the eye, while the elaborate nickel enrichments tend, in connection with the black surfaces of the stove and the ample mica illumination, to give most brilliant effects when the stove is in operation. The company state that they constructed the Monarch Cinderella "with a view to please the ultra critical from an artistic as well as from a mechanical point of view." They express the belief that the verdict of the discriminating buyer will be that, mechanically, it is as carefully designed and constructed as any hard coal base burning double heater offered. Among the special points which deserve the consideration of the trade is the flue construction, this being such that the products of combustion are divided and pass down two flues, one in each corner, which distributes the heat to the extreme corners of the stove, and then over all parts of the bottom, making all the lower portion of the stove a direct heating surface. The heat then passes back through the center flue in the bottom and out through the large ascending flue to the smoke pipe. The hot air flues are large and effective, being located between the descending and ascending flues, and are heated by direct radiation from the sides of both flues. The cold air is taken from the floor, carried along under the base to the circulating flues, and delivered through the pipe collar at the top, from which point it may be conducted to rooms above. The grate is of the Ranson duplex type. The ash pit is large and deep. The fire pot is of good weight and easily removable through the front doors, and the magazine is provided with double covers, preventing the escape of gas and protecting the nickel on the swing cover. The gas cover is automatically raised by the swing cover. The Monarch Cinderella is made in three sizes, and has fire pots ranging in diameter from 12 inches in the smallest to 15 inches in the largest size.

Stove Repairs.

The catalogue of stove repairs just issued from the press by Mahood & Co. of 14 North Second street, Philadelphia, Pa., is a publication of 106 pages neatly printed on good paper, profusely illustrated and bound in colored paper covers. Among the opening pages is a list of the manufacturers named in the catalogue, for whose stoves Mahood & Co. can furnish repairs. It is pointed out that there are stoves made by these manufacturers under special names, different from those advertised in their respective catalogues, repairs of which can also be furnished by Mahood & Co. No attempt has been made to include all foundries in the United States, but mention is made of stoves manufactured largely in Eastern Pennsylvania. It should also be borne in mind that only manufacturers producing stoves at the present time are mentioned, as, in most cases, they own or control the patterns of foundries that have long since gone out of business.

Mahood & Co. state that they carry constantly on hand a large stock, and that their many years of careful study of the business enable them to satisfactorily handle all orders with which they may be entrusted. They can supply parts for all stoves named in the catalogue, and will also endeavor to accommodate their customers in obtaining repairs not named therein. The illustrations are of a character to facilitate the intelligent ordering of repairs for ranges, cook stoves, heaters and furnaces and by using the names there given the dealer will avoid the annoying mistakes which are constantly arising in this branch of the stove business. The names of stoves for which parts can be supplied are arranged in alphabetical order, so that reference to any particular stove is a comparatively easy matter. In addition to their line of stoves and stove repairs Mahood & Co. state that they sell stove dealers' supplies and give in the closing pages of the catalogue a list of these articles, prices of which will be quoted upon application.

THE WASHINGTON FOUNDRY COMPANY is the name of a concern which has just been incorporated at Spokane, Wash., for the purpose of manufacturing Cook Stoves, Ranges and small articles for household use, which heretofore have been purchased from Eastern manufacturers. The four trustees and incorporators of the company are: Samuel Katzenstein, Arthur Katzenstein, Thomas Caufield and Ellsworth Caufield. The erection of the necessary buildings will be begun at once and the machinery for manufacturing purposes will soon be on the way. The incorporators and trustees are well known in Spokane, where for some time past they have been engaged in business.

CHIMNEY AND FIRE PLACE CONSTRUCTION.

A subject which is always of interest to architects and builders, as well as house owners, is that indicated by the above title. A great deal has been said with regard to the construction of chimneys and fire places, but the subject seems to be by no means exhausted. In a recent issue of the *American Architect and Building News* the matter is discussed by W. W. Jackson, who, in part, says:

It is usual to think that a chimney has in itself ability to create a draft, but this is not true. Force is always needed. Usually it is heat; in some cases a fan or other machine gives the motion, or external air movements induce the currents. The chimney is merely a tube—the place in which the results of the energy are manifested, and without some external power there can be no draft.

When there is a current up or down an unused flue, it will be found that the air of the house is warmer or cooler than that outdoors, or the sun's rays may be warming the chimney especially.

The amount of current in the flue depends on the difference of density between the air within the flue and that outdoors. Just as the balance falls when one side is heavier than the other, so the lighter column of air rises from the pressure of denser and colder air. It is pushed up by the heavier volume.

The architect's work is to make easy the operation of the currents. There must be a convenient entrance for the rarefied air from the fire place to the flue, and this throat, as it is called, would best slope at an angle of 45 degrees.

The flue must be built in proportion to the size of the fire place, and must have as much volume as possible in proportion to its wall area.

The surface of the wall exerts an enormous amount of resistance, and especially when there are turns, bends or changes in size. Flue linings are desirable, not alone for their protection against fire, but because of their smooth surface and their uniform size. In fact, a rough brick flue 8 x 8 inches when lined becomes 6 x 6 inches, and although the cross section is not much more than half, the draft is almost equally as good.

A small, smooth flue is better than a flue that is larger, but irregular. In cutting a channel for water in new irrigation plants, the water course is left rough from economic motives. As the demand for an additional supply is realized, the rough rock work is filled in and a more rapid flow results. Air and smoke are similarly affected.

When flue linings are not used, see that the inner walls of the flue are smooth. Cut off the corners when corbeling or turns are necessary.

The shape of the flue must be such as to give a large area, with little friction. Thus a circular flue is better than a square one, and a square better than an oblong rectangle. A triangle is bad, for, with but half the area of a square, it has 85 per cent. of the wall surface. And, too, the corner spaces soon fill with soot, so as to reduce the original area rapidly. The flues of old-fashioned city houses, wide and shallow, are especially bad. Thus, 4 x 16 inches is no larger than 8 x 8 inches, yet it has 25 per cent. more wall surface, and 50 per cent. more exposure to the outside cold.

It is always best to have the chimneys in interior walls, as then more heat is radiated to rooms adjoining the flues and less is taken from the smoke. With an outside exposure, the cooling of the smoke seriously reduces the draft of the flue.

With an interior flue, of course, the more exposed the brick work the more heat will be received in the house from the chimney, which is not a good feature for a kitchen flue in summer.

The size of the flue in cross section should be one-twelfth, or possibly as small as one-fifteenth, the area of the fire place opening. Soft coal requires a proportion of one to ten.

Do not alter the size of the flue, unless it be to increase the area near the upper part, and have no cap or stone over the top.

The chimney must be as high as the highest point of the house, and if there are any high objects near, there will still be trouble when winds are blowing across the chimney toward those objects. In mountainous sections a fire place will inevitably smoke in certain winds, though, of course, an increase in the hight of the chimney will help.

Except that they increase the hight of the opening, chimney tops or cowls do little good. It is not so much the direction of the wind that is disastrous to the draft, but an increase in density of the atmosphere at the place of obstruction. This heavy atmosphere, seeking an outlet to relieve the pressure, goes down the flue and causes a "downward draft."

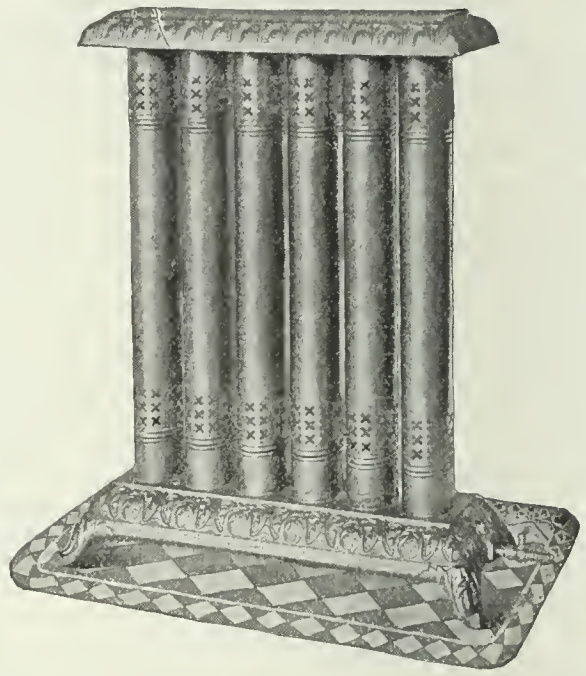
There is one other feature required for the free burning of a grate fire, and that is a source of air to supply or replace the draft. It is evident that the air passing up the chimney must be replaced. One cannot suck air out of a bottle. If the furnace is running it supplies a volume of air and materially helps the draft.

In the usual case, the air comes through cracks around doors and windows, and if there be no cracks the draft is checked. The well built house is more apt to have smoky fire places than the cheap contract house. To supply the draft, either use some of the grates that are constructed on this principle, or yourself arrange a similar system.

Here, too, the wind has an effect on the fire. The side of the house on which the wind blows is under more than normal pressure, and there is a natural exit up the flues of the rooms on the side. On the other hand, the lee side is subject to suction, and the fire places here have this to overcome, or smoke pulls down the flue and into the room.

The Acme Gas Radiator.

One of the new productions of the H. Adler Company, Pittsburgh, Pa., is the Acme gas radiator, shown herewith. It is made with four tubes 19 inches high,



The Acme Gas Radiator.

and also with four, six and eight tubes 30 inches high, adapting it to a wide range of heating requirements. The radiator is finished in bronze and black, with blue steel tubes. The top and base are heavy and are constructed of cast iron of suitable design. A brass pipe burner is provided, so arranged as not to blow out and with an instantaneous lighting device. It is said to be entirely free from odor while burning, and is adapted for burning all kinds of gas.

On a brown paper postal card, which the Independent Register Company, 154-158 Champlain street, Cleveland, Ohio, are sending through the mails, they call attention to the fact that the present is a good time for placing orders for Registers and Ventilators. Note is made that the concern are now manufacturing 75 sizes in square, round, convex and circular top Registers.

New Chimney Base.

We illustrate herewith a new chimney base, or furnace pipe connecting plate, which is being manufactured and placed on the market by Floyd, Wells & Co., Royersford, Pa. This plate consists of a cast iron frame with pipe hole, and is fitted with clean out door below, as shown in Fig. 1. This arrangement makes it very convenient to remove soot or any other matter which has accumulated at the base of the chimney without taking down the smoke pipe or interfering with the draft. The frame is walled into the chimney and is securely held by four projecting flanges, as shown in the cut, and a suitable cover plate is furnished for the base when the smoke pipe is not in use, Fig. 3. A reducing ring, Fig. 2, is used to change the size of the smoke pipe hole, from 8 inches to 7 inches in the No. 20 base, and from 10 inches to 9 inches in the No. 30 base. Copper rivets are used in the hinges of the door to avoid any rusting. We are advised that this new base has met with great favor among architects and builders, as well as with the general trade.

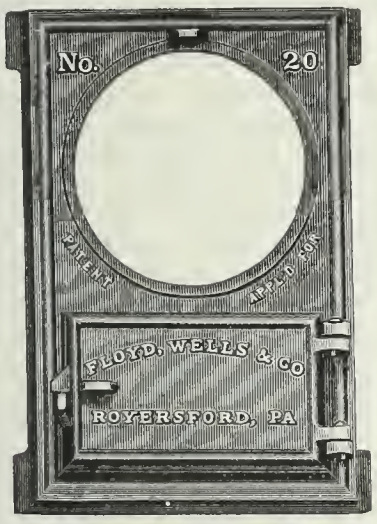


Fig. 1.

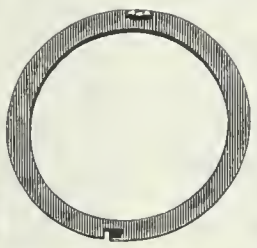


Fig. 2.

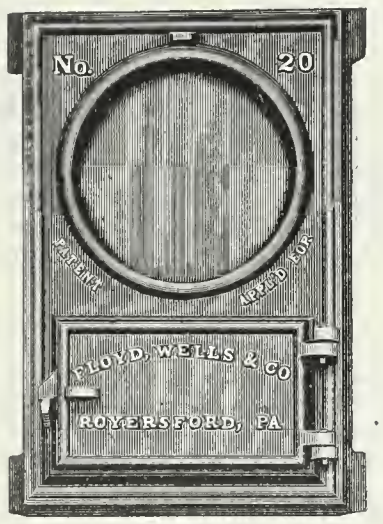


Fig. 3.

New Chimney Base.

Beaver Stoves and Furnaces.

The Beaver stoves and ranges are the subjects of folders which are being distributed among the trade by the Danville Stove & Mfg. Company of Danville, Pa. One of these is a 12-page folder, carrying illustrations of four varieties of ranges, two patterns of oak stoves and three styles of heaters, prominent among which is the Beaver Oak for coal and wood. Another four-page folder deals with the new Beaver hot air furnace, made in three sizes. Its special features include large, heavy sectional fire pot, with protruding flanges, making it a very durable construction. The grate is of the duplex pattern, geared with cogs and operated by a crank, a large crab radiator connecting the heavy steel radiators with the fire chamber. The company point out that the steel radiators are made of the best quality of heavy steel plate, rendering them very durable. They claim that the Beaver has few joints and is absolutely gas tight. A large dust flue connecting the ash pit with the exhaust flue tends to prevent all dust or ashes being carried through the registers.. This dust flue can be used when required to regulate the heat of the furnace, the same as the dust damper in a revertible flue stove.

The Walker & Pratt Mfg. Company, 31-35 Union street, Boston, Mass., have gotten out a very neat eight-page circular relating to the Charm Crawford Range, which they have recently placed upon the market, and which was recently illustrated in these columns. A little pamphlet of 16 pages sent out by the same company gives nine reasons why Crawford Ranges should be used in preference to other Stoves. A few testimonial letters are also presented showing the satisfaction which the Crawford has given to some of those who have demonstrated its merits in a practical way.

ODD PLATES.

J. B. McLean, Lacona, N. Y., was awarded first prize at the Agricultural Society's Fair, held last week at Sandy Creek, N. Y., for his exhibit of Andes Stoves and Ranges, made by the Phillips & Clark Stove Company of Geneva, N. Y.

The Pennsylvania Stove Company have purchased the plant of the Ellwood Bath Tub Works, at Ellwood City, Pa. The buildings will be remodeled and will be fitted up for the manufacture of Stoves and Ranges.

The Tuttle & Bailey Mfg. Company of New York, Chicago and Boston have just issued from the press a 42-page catalogue and price-list of Warm Air Registers, Ventilators, Screens, Borders and other goods which they manufacture in great variety. Attention is given to fine Brass and Bronze Metal Tablets, Grilles, Doors, &c., as well as heating and ventilating specialties, all from architects' designs. Owing to the entire change in list prices in this catalogue, the company request dealers to destroy all former lists. A discount sheet applying to the new standard price-list can be obtained from the company on application. An interesting feature of the closing pages of the catalogue is a series of directions, accompanied by sectional diagrams, showing how to set Floor Registers.

The S. Obermayer Company of Cincinnati, Ohio, are sending through the mail a postal card of commercial size calling attention to the fact that they were established in 1874, and offer the trade first-class material, prompt service, liberal terms and the lowest possible prices. They claim to be the largest Foundry Supply house in the world and can furnish Stove manufacturers with everything required in the foundry.

The Omaha Stove Repair Works, Omaha, Neb., have recently issued a circular announcing the arrival of their full stock of "burning out parts," for nearly all Stoves and Ranges and Furnaces made. They state that it is their purpose to keep in Omaha a full supply of such parts as wear out by constant use, and for Stoves for which dealers are sole agents. The Repairs are said to be made by the manufacturer and are guaranteed to fit. The company have issued a 500-page catalogue, with over 300 illustrations, and announce to dealers that if they have not received a copy one will be mailed on notice to that effect. Since their catalogue went to press the company state that Repairs for over 1000 new Stoves and Steel Ranges, as well as over 500 Furnaces, have been added.

The Buckwalter Stove Company of Royersford, Pa., are sending out a four-page folder calling attention to the Canopy Special Range, made in four sizes of ovens and in seven sizes of tops. It is referred to as combining all the best features of Range construction, great care having been exercised to render it perfect in every detail. The design of the Range is neat and attractive, and the ornamentation tasteful and in keeping

with the general shape and construction of the stove. The top is large, the ash pit is capacious, the fire box fixtures are heavy to insure durability, the water front is of large capacity, and the other features of a character to render the Range satisfactory in operation and pleasing to the eye.

We have received from the Michigan Stove Company a quantity of priuted matter, illustrating their method of assisting their agents in local advertising. Illustrations are given of striking forms of presenting the special merits of goods, having particular reference, of course, to the manner in which the good features of Garlaud Stoves and Rauges can be emphasized. The manner in which cuts can be used is shown very suggestively. Local reading notices are also framed in a manner enabling them to be used *verbatim*. These suggestions are undoubtedly of value to a busy merchant. The company have also sent us a copy of a letter received from an Illinois Stove dealer, who expresses his great satisfaction with the Garland line, which he says he was induced to handle four years ago. While occasionally he has been persuaded by representatives of other houses to purchase goods of them, on the ground that they were as good as the Garland and cheaper in price, he had been disappointed in every shipment. We have further received from the company a beautifully decorated tin whisk holder, which is being furnished to agents as an advertising device. This holder has the Garland trade-mark as the central feature of its decoration.

The Prizer-Painter Stove & Heater Company, Reading, Pa., with branch offices in Boston, New York, Detroit, Chicago and St. Paul, have found it necessary to provide increased facilities to meet the demand for their Henderson Water and Steam Heaters. An addition to the foundry, 50 x 150 feet, has just beeu finished, and more traveling cranes, another air compressor and other machinery installed.

A. J. Magoon & Son, 313 Weybosset street, Providence, R. I., announce that they are prepared to furnish promptly Repairs for Spicer and Barstow Stoves. They advise us that they use original patterns and can offer decided advantages in the way of prompt attention and low prices.

The annual meeting of the stockholders of the Pittsburgh Stove & Range Company was held in Pittsburgh on Monday, September 2. Charles H. Bradley resigned as president, and was succeeded by John D. Nicholson of George B. Hill & Co., stock brokers, of Pittsburgh. Lyman De Haven also resigned as director. No other changes were made among the officers. The report of operations of the company for the year was presented to the stockholders, and was regarded as quite satisfactory.

EFFECT OF STEEL STRIKE ON HARDWARE TRADE.

The close relationship between the hardware trade and the large producers of iron and steel is being strongly demonstrated by the strike now existing in mills controlled by the United States Steel Corporation. The products which are particularly affected by this strike are tin plate, light sheets and hoops. These products are, of course, sold in their ordinary form, as they come from the mills, by many hardware establishments. The effect on the hardware trade, however, is felt to a much greater extent through the difficulty experienced by manufacturers of hardware in obtaining a sufficient supply of material to meet their requirements in making up goods. In going over his stock a wholesale merchaut is confronted with the fact that only a small proportion of the goods which he handles does not contain in some form oue of these products affected by the strike. It may be said, in fact, that nine-tenths of the goods commonly denominated hardware cannot be completed without the use of some one of these materials. The restriction of the supply caused by the stoppage of these works is therefore a serious matter to the entire hardware trade. If relief does not soon come by the starting of the closed mills it threatens to greatly cut down the volume of business. Stocks of hardware were light when the strike began in these mills, as the market supply had been seriously cut down by the stoppage of the mills for so long a period last year. The manufacturers and jobbers have been unable to accumulate any stocks of any consequence since then, while the demand from consumers has been simply phenomenal. As soon as the strike occurred its effect was, therefore, felt through the entire trade. It is to be hoped that the indications which now point to the early termination of the strike are not misleading. A condition will then be ended which is rapidly becoming one of great embarrassment. The exhaustion of stocks, however, all aloug the line, from the manufacturer through the jobber to the dealer and consumer, will undoubtedly be of benefit to the trade for months to come in keeping up an active demand.

Changes in the Lalance & Grosjean Mfg. Company's Staff.

The remarkable growth in the busiuess of the Lalance & Grosjean Mfg. Company of New York City duriug the past year or two has necessitated the enlargement of their managing staff at the main offices, 19-21 Cliff street, New York City. With this end in view the company have removed James D. Fleming, manager of their Chicago branch, to the headquarters office in New York. Mr. Fleming, who has already entered upon the discharge of his new duties, has beeu the company's Chicago manager for six years, but has been connected with the company for a much longer period. The vacancy caused in the management of the Chicago office by Mr. Fleming's promotion has been filled by the appointment to that post of Palmer W. Holmes, who has been one of the most efficient salesmen of the house for a number of years past, covering the territory west of Chicago. The rules of civil service are applied here, as Mr. Holmes receives recognition for the fine record he has made as a salesman.

The Lalance & Grosjean Mfg. Company's immense factory at Woodhaven, L. I., N. Y., and their rolliug mills at Harrisburg, Pa., have both been kept running with full force through the summer, and the large volume of orders now on the books of the concern insures a steady continuance of operation at both plants throughout the coming winter. The business of the concern has made such remarkable strides of late that already the large additions to the enameled ware department at the Woodhaven factory, made early last year, seem to be becoming inadequate. The concern are now employing about 2100 hands at Woodhaven. They are erecting a large warehouse building on a piece of property adjoining their plant on the west side.

The National Metal Weather Strip Company of Allegheny, Pa., have been incorporated, with a capital stock of $10,000, by Samuel P. Bricker, James W. Gray, Francis J. Torrance and Nathaniel R. Wishton, all of Pittsburgh. The company have a well equipped plant on Isabella street, Allegheny.

The Saginaw Mfg. Company, Saginaw, Mich., are producing an improved Glass Washboard which they have just placed on the market. The manufacturers claim that the rubbing surface, being of glass, offers no chance for clothes to catch on the Board and be torn. The point is also made that the Board is practically indestructible and with reasonable care will last many years.

An interesting item of news transpired this week to the effect that all differences existing between the National Enameling & Stampiug Company and the Lalance & Grosjean Mfg. Company of New York City have been mutually adjusted to the satisfaction of all parties concerned. We are officially advised that all litigation between these important interests has been settled.

Timothy J. McHugh.

Timothy J. McHugh, superintendent of the Boston Brass Company of Boston, Mass., died of Bright's disease on August 21, at his residence in Cambridgeport, Mass., aged 52 years. Mr. McHugh learned his trade with the Walworth Mfg. Company and later was for a number of years superintendent of the old firm of Ward & Curley. He was also connected with Smith & Anthony for a period of ten years, until 1897, when he became superintendent of the Boston Brass Company. Mr. McHugh was the originator of the Ward ball cock, also the "B. B." ball cock, as well as a large number of other patented devices in the line of plumbing goods. He was well known to the plumbing trade of New England, and was regarded as one of the foremost brass workers of the country. He is survived by a widow and four children.

A Municipal Hot Water Heating Plant.

The city of Goshen, Ind., has for some years past been cited by the advocates of municipal ownership as a shining example of a community wherein the theory has been most successfully carried out. The town is in possession of flourishing municipal water works and an electric lighting plant. And it has now decided to go into the hot water heating business on a large scale. The central heating plant will be located, according to plans lately approved, at the water works, and it is figured out that the exhaust steam will supply the plant easily for several years. The cost of operating will be chiefly composed of a small addition to the pay roll of the water works plant, and the expense of the fuel which will be used in generating power to pump the hot water through the pipes and radiators. It is figured out that the enlarged revenues from the city plant, established in connection with the water works and electric light station, will be sufficient to pay off the bonded indebtedness within 15 years at the most. While there are many privately owned hot water and steam heating plants in the country supplying hot water to customers from a central heating station, this is the first case in which a municipality has taken up the matter. It is expected that the system will be in partial operation not later than the middle of November.

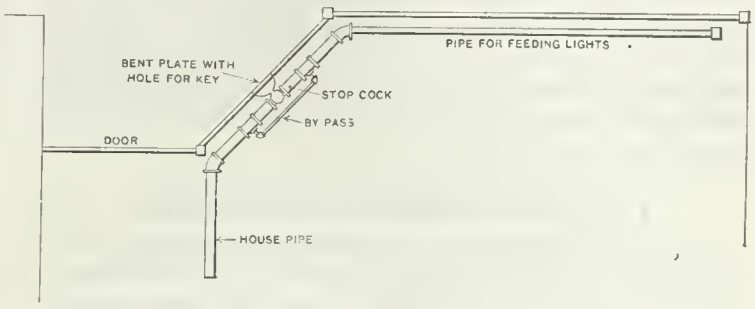
Pump and Well Supplies.

The Mark Mfg. Company, Evanston, Ill., whose mail address is Drawer C. C., Chicago, have just brought out their No. 7 catalogue of supplies for well drillers, which is much more extensive than any previous publication issued by this company. The contents of the catalogue comprise the full line of supplies needed by drillers, including wrought pipe, driving well points, tubular well cylinders, working barrels, pump cylinders, check valves, tubular well valves, rod couplings, drive shoes, earth augurs, pipe tools, &c. The company are now occupying a much larger plant at Evanston than formerly used by them in Chicago, and consequently have greatly improved facilities for meeting the requirements of their trade. The company have also issued their special catalogue A, which treats of the tools of which they make a specialty, comprising the Mark roller pipe cutter, the Mark improved three-wheel pipe cutter, the Mark improved one-wheel pipe cutter, open hinge malleable iron pipe vises, pipe benders, melting ladles, malleable iron oilers, the Baxter adjustable S wrench, Mark pattern heavy and light steel dogs, Mark and Snow pattern adjustable clamps, tinners' snips, &c.

THE BARNES MFG. COMPANY, Mansfield, Ohio, have just issued catalogue C, cloth bound, 192 pages, containing full lines of iron and brass Hand, Wind Mill and Power Pumps of their manufacture, together with kindred goods, such as Steam Fitters', Water Works and Well Drillers' Supplies, in which they deal. A little later on exact duplications of this book will be issued in the form of a pocket edition for handy reference.

GAS BY PASS FOR WINDOW LIGHTING.

At a recent meeting of the Ohio Gas Light Association, W. H. Anson, Columbus, Ohio, contributed to the "Wrinkle Department" the following suggestions and sketches for saving gas when lighting show windows and to permit the window lights to be controlled by a watchman or attendant without entering the store:



Gas By Pass for Window Lighting.—Fig. 1.—Plan, Showing Arrangement of Keyhole.

The supply pipe to the window lights is run so as to be accessible from the outside of the window and a stop cock is placed in the pipe with an extension stem running through to the outside with a square head to fit the night watchman's key. The opening is finished with an ornamental floor plate. This window lighting

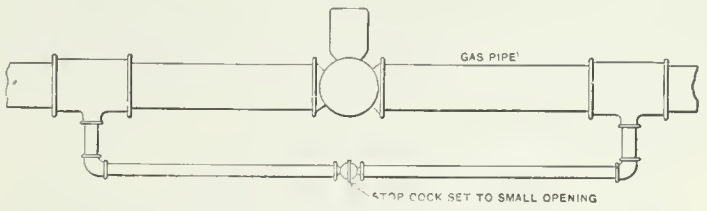


Fig. 2.—Compensating By Pass.

scheme enabled the house using it to obtain a great deal of patronage that would not otherwise have been secured. The by pass shown in Fig. 1 is a simple form and very old.

The by pass Fig. 2 is a modification of Fig. 1 to compensate for fluctuations in pressure. A Wilder or other suitable form of a volumetric governor burner is

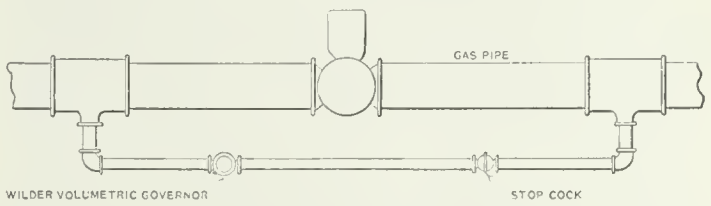


Fig. 3.—By Pass with Governor.

sometimes inserted on the small by pass pipe, as shown in Fig. 3, and at a time of lowest pressure is adjusted to pass just enough gas to maintain the pilot lights. This results in a less consumption, and prevents the objectionable glow of the lights at time of high pressure when they are not in use, and if adjustment is made at

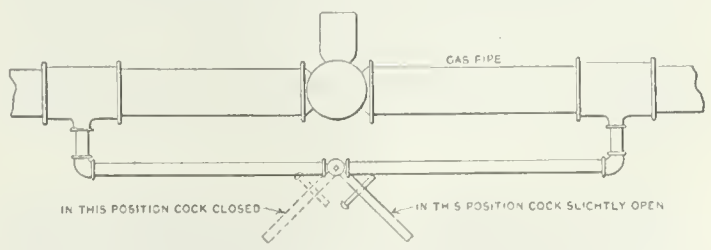


Fig. 4.—Method of Adjusting Stop Cock.

time of lowest pressure, they will always light up when the main cock is opened.

The by pass shown in Fig. 4 is made by using a stop cock which has a bent handle, which brings the arc of its movement on a vertical plane with the center of the pipe. A hole is tapped in the handle of the cock,

and a machine screw is inserted which strikes the pipe and fixes the extent to which the cock may be closed. A by pass of this sort may be so arranged that the gas may be entirely shut off by throwing the lever handle of the cock toward the head of the screw, and when thrown toward the point of the screw the cock will have sufficient opening to maintain a light in the lamps. The screw permits a very delicate adjustment.

Maintaining Welsbach lights with just sufficient gas to keep them lighted can be done satisfactorily under very unfavorable conditions if the matter is given proper attention. I know of no simple way, however, to get satisfactory results where lights are on different levels, except by piping all lights on different levels with separate pipes.

Fire at the Ahrens & Ott Works.

The sales department of the Standard Sanitary Mfg. Company has issued the following notice to the trade:

Owing to a fire in the small ware enameling department of our Ahrens & Ott Works, Louisville, Ky., on Friday, August 30, we wish to announce to our patrons that arrangements have been made to take care of this business promptly from our other factories, hence there will be no delay in the fulfillment of any orders which were in hand at Louisville. The bathtub department of the Louisville Works is unharmed, so that our customers need feel no fear that shipments will be detained in consequence of the fire. A large force of men is already at work repairing the damage, and the interruption will only be temporary, as new buildings will be erected immediately to replace those affected. To insure against delays prompt action has been taken to stimulate and increase the production and shipment of orders from our Standard and Dawes & Myler Works.

New York City Notes.

Considerable complaint is being made by plumbers about the methods of inspection lately adopted by the Department of Buildings, whereby there are only a few men detailed to make the final inspection, and it often happens that the other mechanics are pushing the plumbers and great delay and trouble are caused by having to wait until an inspector can get around for the final test.

* * *

Among the busy plumbers are: T. J. Cummins, who is doing a factory building for the Astor Estate on Eleventh avenue, between Fifty and Fifty-first streets; Huston & Corbett, at 51 West Twenty-first street, who are plumbing stores for Higgins & Seiter; Byrne & Murphy, who are at work on a mansion at 71-75 East Seventy-third street, for Jos. Pulitzer, editor of the New York *World*, and T. J. Byrne, with a stable for C. A. Peabody, at St. Nicholas avenue and 155th street; John Boyd is putting in sewers for the new Public Library, Fifth avenue, from Fortieth to Forty-second streets; M. J. O'Brien is hard at work on the Administration Building on Blackwell's Island; Chas. A. McMurray has a large apartment house on 128th street near Seventh avenue.

* * *

At the outing of Manhattan Branch last week the number of old members present was noticeable. Among them were John Renehan, James Nugent, John Yule, J. A. Rossman, James Howard, Wm. Kirchhof, P. J. Carpenter of Dobbs Ferry, Philip Brady, M. J. O'Brien, Cauldwell Fraser and many others. The supply trade was also well represented, about every house in the trade having one or two representatives present.

* * *

The Law Committee of Manhattan Branch are still active in the prosecution of unlicensed plumbers. They have several cases awaiting disposition in Special Sessions and many more to bring up when these are disposed of.

WORK is progressing rapidly on the new Tube mill being built by the Sharon Steel Company, at Sharon, Pa. The company will make Black and Galvanized Tubes up to 12 inches.

Heating and Plumbing Notes.

THE ALLEN FIRE DEPARTMENT SUPPLY COMPANY, Providence. R. I., have the contract for steam heating the new Woodbury Memorial Chapel in that city.

THE IRON CITY MFG. COMPANY of Pittsburgh, Pa., are making extensive improvements in their plant at Zelionople, Pa., which will provide an increase in capacity of about 50 per cent. The company have also under consideration an extensive addition to their present foundry which will enable them to double their output. They manufacture a general line of sanitary goods, but make a specialty of Enameled Bathtubs. On the completion of the additions they will be enabled to produce 75 Tubs a day.

THE plumbing shop of Rothmel & Merten of 705 Ninth avenue, New York City, was wrecked a few days ago through the explosion of a dynamite cartridge which had been placed in a vise by Charles Merten, the 19 year old brother of one of the partners. Young Merten was so seriously injured that his recovery is considered very doubtful. The shop was completely wrecked by the explosion.

THE new law creating a plumbers' examining board and requiring all plumbers to receive certificates of competency from the same, after examination, went into effect in Grand Rapids, Mich., on September 5. Every plumber in the city who has not been actively employed for a space of two years will be obliged, in order to continue at the business, to pass an examination before the board to secure a certificate of competency, and all new plumbers will have to do likewise before they can obtain a license to practice their trade. The examining board is composed of the city engineer, the city health officer, Plumbing Inspector Thompson, William Robertson and William H. Vander Veer.

A REPORT from Springfield, Ohio, says that plans are under consideration for the enlargement of the American Radiator Company's plant in that city, so as to double the present output of the works.

THE STANDARD SANITARY MFG. COMPANY'S Ahrens & Ott plant at Louisville, Ky., was visited by fire on September 1, causing a loss of about $56,000. The enameling shop, mixing mill and part of the warehouse were destroyed, together with some outbuildings and stock in freight cars. The loss is fully covered by insurance.

RIDGWAY & TYLER of Albany, N. Y., have installed a heating and ventilating system in the new Masonic Temple in that city at a cost of $3749.29.

N. S. STEWARD & Co. of Bangor, Maine, are erecting a new building for their plumbing business in that city.

THE contract for plumbing and heating the new church of the Belmont Avenue Baptist Society, Springfield, Mass., has been awarded to R. Wilson & Son of that city. The same firm are doing the plumbing in the new houses which Gragnier & Angers are building, at the corner of Fort Pleasant and Park avenues, Springfield.

FRANK B. LYON of Red Jacket, Mich., has submitted a proposition to the Town Council of that place offering to put in a general heating plant to supply the heat to any houses that desire it. He has asked that a stock company, formed with local capital, be granted a concession to lay pipes under the streets. The Town Council have the matter under advisement.

MACBRAYEN & MAHN of New Haven, Conn., are installing new sanitary plumbing in the Grand Opera House in that city.

P. GORMLEY, Philadelphia, Pa., will install heating plants at the priests' and sisters' houses of the Roman Catholic Church of St. Boniface, in that city, at a cost of $2200.

HENRY BEUTELSPACHER, Bridgeport, Conn., has the contract for plumbing the Waltersville School House.

J. H. WILLIAMS & Co. of Brooklyn, N. Y., have prepared a catalogue illustrating and describing their extremely wide line of Drop Forgings made of iron, steel, copper, bronze or aluminum. Their factory is equipped with the latest appliances for the accurate and econom-

ical production of Drop Forgings. This concern were the first to establish a uniform line of Drop Forge Wrenches, and to make them with the 15 degree angle which has since been generally adopted. They have a larger number of Wrenches than are made by any other manufacturer, and they range all sizes. Wrenches for every size bolt from ⅛ inch to 5 inches inclusive are kept in stock.

THE works of the Atlantic Tube Company, at Beaver Falls, Pa., which have been idle since June 15, and which were recently sold at receiver's sale, will probably start up this week. The Pittsburgh Seamless Tube Company, recently organized at Pittsburgh, will operate the plant, making Seamless Tubing. E. M. Wolf will be superintendent.

WELLINGTON & MILLER, Bridgeport, Conn., have a number of important steam fitting jobs in hand, including one on the new building which is being erected for the Fairfield Rubber Company, one for the Canfield Rubber Company and another for the Connecticut Railway & Lighting Company.

A LARGE illustrated card is being sent through the mails by the Smoke Prevention Company of America, 66 Broadway, New York City, in the interests of their Automatic Smoke Preventer and Fuel Economizer. The company state that the amount of coal that will be saved by their apparatus depends on the condition of the plant, and that they are prepared to make a careful study of any plant with the object of reporting what the saving will be, a saving, moreover, which they will guarantee.

JOHN B. MURPHY of the Crane Company, Chicago, has just returned from a two months' vacation tour abroad.

THE LUNKENHEIMER COMPANY, Cincinnati, Ohio, have installed in section 46 of the Machinery and Transportation Building at the Pan-American Exposition in Buffalo, N. Y., a very handsome exhibit of their productions in the line of Brass and Iron Steam Specialties and Engineering Appliances. F. L. Swanberg is in charge of the exhibit.

CHARLES D. MOORE of the plumbing firm of Sprague & Moore, Westfield, Mass., died of Bright's disease on August 26 at his home in that city, aged 43 years. Mr. Moore was born in Rainbow, Conn., and as a young man was employed in the Capitol Building at Hartford. Ten years ago he removed to Westfield, and shortly afterward formed with H. M. Sprague the plumbing firm of Sprague & Moore. He leaves a widow, but no children.

J. G. STACY, Seneca Falls, N. Y., has secured the contract for heating and ventilating the new High School Building at Waterloo, N. Y.

THE AMERICAN VALVE COMPANY, Coxsackie, N. Y., are about to erect a machine shop of brick and steel construction, 40 x 120 feet in area, on a lot which they have purchased adjoining their present plant.

THE MUELLER COMPANY, Milwaukee, Wis., have been awarded the contract for heating Gimbel Brothers' new nine-story store building and the large new machine shops now being erected for the Nordzberg Mfg. Company in that city.

LANGARD BROTHERS of Halifax, Nova Scotia, have just completed one of the largest hot water heating contracts ever done in that part of the country. It is a system for the Alexandria School, in which 65 radiators were installed and over 6000 running feet of pipe used. The whole work was done in twelve weeks.

JOHN P. RICHARDS & SONS, Philadelphia, are engaged in installing a low pressure steam heating system in St. Martin's Protestant Episcopal Church in that city.

RIDGWAY & TYLER, Albany, N. Y., have booked a contract for installing a new steam heating system for the church and parish hall of Grace Episcopal Church in that city.

JOHN A. FISH of Boston, Mass., who is well known to the heating trade, has associated himself with the Walker & Pratt Mfg. Company of that city, and will manage their wholesale Boiler department. Mr. Fish will be glad to meet his old friends at 31-35 Union street, Boston.

E. L. SMALL, New Britain, Conn., has taken the contract to furnish the steam heating apparatus for the passenger station in Harlem, New York City, which is being erected by the New York, New Haven & Hartford Railroad.

THE Common Council of Lansing, Mich., has granted to Platt Brothers of that city the right to lay mains in several streets for the purpose of conveying steam for heating from their power house to the State Capitol. The firm have secured the contract for heating the Michigan State House for the term of two years. They will also sell steam for heating other buildings along the streets on which the mains are laid, and propose extending the system throughout the city eventually.

THE J. J. HOWDEN COMPANY of Muskegon, Mich., have been awarded the contract for installing a heating system in the Hackley Manual Training School, at a cost of $15,000.

H. O. HOLT has sold his interest in the business of Holt & Clark, plumbers and tinsmiths, at Richford, Vt., to Henry Clark of Burlington, a brother of his partner. Mr. Holt's withdrawal from business is caused by sickness, which makes complete rest absolutely necessary.

THE *Herald* of Northampton, Mass., states that an effort is being made to organize a stock company in that city for the manufacture of Lead Pipe and other Plumbing Material.

THE journeymen plumbers of Washington, Pa., are on a strike for an advance in wages from $3.25 to $3.50, with a nine-hour day and eight hours on Saturday.

THE ILLINOIS MALLEABLE IRON COMPANY, 30 West Monroe street, Chicago, advise the trade that they have on hand a good stock of Black and Galvanized Pipe in sizes from ¼ to 2½ inches inclusive, and will accept orders for immediate shipment of the same. They add that new shipments are now on the way which will enable them to execute orders for larger sizes about September 10.

New Firms and Changes

THE G. F. BARD CORPORATION of Norwich, Conn., have been incorporated with a capital stock of $10,000 to deal in Iron, Steel, Copper and other Metals and Plumbing Supplies. The incorporators are: George F. Bard, G. Percival Bard and Charles T. Bard, all of Norwich.

THE CHICAGO STEAM GENERATOR COMPANY of Chicago, with a capital of $2500, have been incorporated by George H. McGlenn, Guy H. Powell and John S. Lemon for the manufacture of Steam Generators and other appliances.

THE JAMES BARRETT MFG. COMPANY is the title of a new concern who have started in the plumbing supply business at 48-50 Pearl street, Boston, Mass. The firm are composed, in addition to Mr. Barrett, of P. J. O'Brien, formerly Boston representative of Dalton & Ingersoll, who acts as president, and J. J. Deveraux, lately with the Webb Mfg. Company, who is secretary and treasurer. Mr. Barrett is known to the trade as the inventor of the Barrett sewer trap, the Barrett grease trap and other sanitary devices.

C. C. SOFLEISS has opened a plumbing establishment on South Broad street, Woodbury, N. J.

THE ALLEN STEAM TRAP & SEPARATOR COMPANY, St. Louis, Mo., have been incorporated with a capital of $100,000 by H. T. Smith, Dod G. Gibson, P. W. Dent, William H. Garland and others.

WILLIAMS & MARVIN MFG. COMPANY, Deep River, Conn., have incorporated to manufacture Turned Wooden Goods, Hardware and Plumbers' Supplies. At present their special line of work is Lignumvitæ and Maple Caster Wheels, Water Closet Pulls in the various woods, and variety Wood Turning in general.

THE CAROLINA PLUMBING & HEATING COMPANY of Charlotte, N. C., have been incorporated by W. H. Bigelow, S. A. Abbey and T. A. Conklin, Jr., with a capital stock of $25,000.

JAMES M. LEAHY has opened a plumbing shop on Main street, St. Albans, Vt.

TROUBLES WITH STEAM APPARATUS.

BY Z. W.

Although not a steam fitter nor engineer, I have had two troublesome experiences with steam apparatus which convince me that most of the troubles reported are not due so much to the appliances as to the misuse of them. My first experience came when I was a boy about 14 years old. I was employed in a factory where silk handkerchiefs were made. They were made in strips, and a part of the finishing process was to dry these strips, the method being to pass them over and under tin cylinders about 18 inches in diameter. These cylinders were supplied with steam, and revolved on an axle which was hollow so as to allow the steam to enter and keep the cylinders hot. While attending these cylinders and keeping the silk guided in the proper direction, under the superintendence of the engineer, one of the cylinders began to make an unusual noise that scared the engineer, who was afraid that the cylinders, being made of light tin, would burst. He shouted to me to bring a pail of water and pour it on one of the cylinders. This I did quickly, and was much surprised to see the thing cave in.

This accident occurred in the presence of a man of some general learning, and after the engineer had expressed surprise and wonder at the occurrence, this gentleman explained that the cold water put on the surface of the cylinder had caused the steam inside to condense and create a vacuum. Then the atmospheric pressure on the outside was sufficient to cause the cylinder to collapse. This instance was brought to my mind by meeting the same gentleman some time ago, although the accident occurred more than half a century ago.

This experience did not stop me from following a mechanical trade. In future years, when I had become a master hand at mechanics, I was employed at a plant where a large boiler was used to make steam for heating coils, as well as furnishing steam for the engine. One morning, when the ground was covered with snow about a foot deep, and the thermometer was dallying with the zero point, the caretaker of the factory came to my house and asked me to come to the factory at once, as he thought the boiler had burst, for the plant was being flooded. He had come for me because I lived nearer to the factory than any other person that he thought could help him out. It had been his custom to gratify his own ideas of safety by turning on a little more water in the boiler when he came to take charge of the plant at night. This he had forgotten to do until about twelve o'clock. He then turned the water on, and as there was a higher pressure in the street main than in the boiler, the boiler eventually flooded, and what could not find outlet through the safety valve was running out through the leaky valves and other openings, wherever steam was connected, as well as through the engine. Of course, it did not take me long to find that the boiler was flooded, and that the large quantity of water found could not come from the boiler, but must come from some other source. Seeking the supply cock I found it wide open. It was only necessary to shut this off to stop the further flooding. I then had the pleasant job of assisting the man to get the plant ready for use in the morning, as I knew that in several departments there were important orders to be completed as soon as possible.

These two experiences with steam plants occurred early in my life, and since that time numerous others of like character have come under my notice, although I have not been so closely identified with them.

THE STANDARD LIGHTING COMPANY, Cleveland, Ohio, are distributing two illustrated folders advertising their Improved Standard Smokeless Oil Heaters and their New Process Oil Heaters. The cuts show the construction of their smokeless device, whereby the wick cannot be raised enough to smoke. The Heater is also provided with an automatic extinguisher. This smokeless device is claimed to obviate much that has been found objectionable in other oil heaters.

Gurney Heater Mfg. Company's Traveling Men Meet.

The regular semiannual meeting of the traveling staff of the Gurney Heater Mfg. Company of Boston, Mass., recently held in that city, was a most enjoyable occasion for the traveling members of the company's force. After the meeting, at which the business of the concern for the past six months was reviewed with the officers of the company, an elegant dinner was served at the Parker House, followed by the adjournment of the entire party to the Boston Museum, where the antics of "The Governor's Son" were enjoyed. On the following morning the party took a trip to the foundry, where the boys were shown how their orders were taken care of. Subsequently the party were taken aboard Frank P. Gurney's beautiful 84-foot yacht "Lotis," where they were met by President Edward Gurney and his son, Holt Gurney. The party were taken to the beach at Hull, Mass., where a bounteous dinner awaited them at the Hotel Pemberton.

An enjoyable incident occurred after the table was cleared, when an elegant gold headed walking stick was presented to President Edward Gurney as a token of esteem from the members of his traveling staff. The presentation speech was made by C. W. Rugg. Mr. Gurney, in returning thanks for the present, remarked that he hoped "the present force would be with him for many years to come." The party were then taken back to Boston, where the men disembarked for the different trains which would carry them to their various scenes of action.

Those present were: President Edward Gurney, Vice-president and General Manager William T. Isaac, Secretary and Treasurer A. G. Merser, Frank P. Gurney and Holt Gurney, and the following members of the traveling staff: E. H. Dow, J. S. Matson, F. W. Ashcooft, E. L. Sollis, C. W. Rugg, F. D. Miller, F. Jones, George C. Boose and George E. Rinkenberger. The office was represented by P. W. Sharp, R. B. Williams and Ralph Marden.

Solders for Aluminum.

Notwithstanding that the subject of soldering aluminum has been treated in these columns many times during the past few years, requests for information on this head still continue to reach us with great frequency, showing that the matter is one which interests a large number of our readers. For their benefit is reprinted from the current issue of the *Journal* of the Franklin Institute of Philadelphia the following article, which covers the general subject of solders for aluminum:

The one great drawback to the application of aluminum for a large number of uses in the arts for which its lightness, color, resistance to oxidation and the ease with which it can be rolled, drawn into wire, pressed and spun up into various shapes, &c., is the difficulty of soldering joints. While some approximations have been made to a durable solder, among which that of Richards' should be named, it is nevertheless true that an entirely satisfactory solution of the problem has yet to be found.

The difficulties encountered are threefold: 1, the high heat conductivity of aluminum, which abstracts heat rapidly from the joint, and, 2, galvanic action between the aluminum and the metals of the solder by which the aluminum, the more electro-positive metal, is corroded and the joint destroyed.

It is comparatively easy to make an apparently perfect soldered joint of aluminum with various mixtures of zinc and tin, for the reason that when freshly made the adherence is all that could be desired. The effects of the galvanic corrosion may make themselves apparent after the work has been exposed to atmospheric influences for some months. The rapid heat conductivity of the metal can be practically obviated by applying artificial heat to the joint while the solder is being applied. It has been proposed to use aluminum in considerable proportions in the solder to avoid the effects of galvanic action, but while this artifice might accomplish the desired result, the joints cannot be made with the soldering iron, because of the high heat required to melt the alloy. A perfect solder for aluminum is still to be found.

The Sharon Sheet Steel Company.

The Sharon Sheet Steel Company of Sharon, Pa., will make application for a charter on September 23. The incorporators are: John Stevenson, Jr., Nevin McConnell, J. P. Whitla, all of Sharon; George W. Darr of New York and William Flinn of Pittsburgh. The Sharon Sheet Steel Company are an identified interest of the Sharou Steel Company, and propose to build a ten-mill plant at Sharon, for the manufacture of black and galvanized sheets. Nearly all the contracts have been placed, the buildings being given to the American Bridge Company and the mills to Mackintosh, Hemphill & Co. of Pittsburgh. A large galvanizing plant will also be erected, and it is the intention of the Sharon Sheet Steel Company to have one of the most complete sheet mills in the country. It is possible that after the first ten mills have been built the plant may be increased to 20 mills. Work of construction will be pushed as fast as possible, and the concern expect to be in the market as makers of sheets about the first of the year.

New Enameling Process.

William A. Dunlap of Pittsburgh, Pa., says the *American Manufacturer*, has an improved method for enameling metal surfaces free from ridges or irregularities and imparting a smooth, glossy, beautiful appearance of such thinness and elasticity that the contraction and expansion of the metal under changes of temperature, as in cooking utensils, will not crack or injure the enamel surfaces. It is characteristic of the methods heretofore employed for producing marbleized or variegated effects that at least one of the coats should be comparatively thick, so as to sink into the other coat. Owing to the difference in plasticity both coats of enamel would not spread uniformly, so that ridges and irregularities would be produced in the finished surface, and further, the difference in plasticity promotes coagulation of the coats during drying and burning. In the improved method the two coats, or, more properly speaking, the two mixtures which form the finish coat, have equal plasticity and specific gravity, so that they will mingle easily and uniformly over the metal surfaces.

In the practice of the invention the metal surfaces are prepared for enameling by the usual method of pickling, neutrallzing, and cleansing. Special care is taken in the preparation of the sheets to eliminate all traces of acid and to produce a smooth, bright surface, so that the ground or foundation coating may enter closely into the pores of the metal and adhere. A ground or foundation coating is applied in the usual manner—*i. e.*, by slushing or dipping—the surplus enamel or material being shaken off, so as to leave only a very light, thin, and almost transparent coat on the metal surface. This ground or foundation is formed by mixing the following ingredients in about the proportions stated: Quartz, 350 pounds; borax, 500 pounds; feldspar, 300 pounds; soda ash, 75 pounds; cryolite, 50 pounds; fluorspar, 40 pounds. To these is added a coloring material to produce the desired shade or color for the foundation or ground coat.

After the foundation or ground coat has been dried and burned in the usual manner a second or finish coat is applied in the same manner as the ground coat. This second or finish coat consists of the ingredients before stated and in about the same proportions, except that the fusing point of the mixture is lowered by the addition of suitable flux—such as borax, feldspar, soda ash, &c.—and a coloring matter or material is added, so that the mixture will have the same color or contrast in color from the foundation coat or ground. In preparing and applying this second coat care should be taken that it is sufficiently thin to run quickly over the surface and form only a thin coat thereon. While this finish coat is still fluid a second coat is applied by means of a brush or other appliances, so that it will be thrown or projected in drops or like spray with sufficient force to cause it to sink into and through the first coating until it comes in contact with the underlying foundation or ground coat. Then by shaking these two coats blend or run together, forming what is practically a single coat on the ground or foundation coat. The second coating is of the same character as the finish coat, except that it is a contrasting color. In preparing these second coats care should be taken that the two mixtures shall have practically the same fluidity and specific gravity, so that when the second coat is applied and sinks into and through the first coat it will not tend to push up or raise the first coat by displacing the latter, but will simply intermingle or flow into the latter, and the two coats will spread as a single coat evenly and smoothly over the metal surface. After the two coats have been blended or intermingled, as stated, they are dried and burned in the usual manner, producing a smooth, glossy surface entirely free from ridges or irregularities.

As both coats are very fluid, and therefore spread thinly over the metal surfaces, there is no liability of a coagulation of the coatings during the drying and burning, and further, as the enamel surface is very thin, it will accommodate itself to the expansion and contraction of the metal under changes of temperature without cracking or injury to the enamel.

The Pope Tin Plate Company.

The Pope Tin Plate Company, recently organized in Pittsburgh, with a capital of $500,000, will build a 12-mill tin plate plant at Steubenville, Ohio. Contracts for the buildings have been placed with a leading bridge interest, and the mills, shears and other equipment have also been placed. The main building containing the hot mills will be 380 feet long and 80 feet wide. Another building will be 360 x 40 feet, a third, 300 x 75 feet and a fourth, 180 x 25 feet. There will be smaller buildings, consisting of tin house, boiler house and warehouse. The plant will be so constructed that 12 more mills can be added, and these, if built, will be either tin or sheet mills. Work on the building of the plant will be pushed as fast as possible, and the concern hope to be making tin plate inside of six months. The offices of the company are at 421 Wood street, Pittsburgh, Charles E. Pope being president, and E. W. Mudge, secretary and treasurer.

Youngstown Iron & Steel Roofing Company.

The new four-mill sheet plant of the Youngstown Iron & Steel Roofing Company, which has been under erection for six months, is practically completed and the first sheets were rolled Wednesday morning, September 4. The plant is modern throughout, the equipment being the best that money could buy. John W. O. Pew, general manager, had invited a few guests to be present at the starting of the mill, and among these were L. E. Cochran, for many years identified with the iron industries of Youngstown, and who is president of the Youngstown Iron & Steel Roofing Company; T. B. Davey and W. W. Bonnell of the Finished Steel Company, J. T. Haslett and Andrew Milliken of the Youngstown Car & Mfg. Company, James P. Kennedy of the American Bridge Company, Robert A. Walker of *The Metal Worker*, and others. The mill started off very nicely, and when in complete running order will turn out from 1200 to 1500 tons of sheets per month.

We are advised by the J. M. & L. A. Osborn Company, Cleveland, Ohio, that C. C. Moore, who has ably managed the company's Columbus branch for the past two years, relinquished his position on September 1. E. C. Howard, who has covered the entire territory contiguous to Columbus for the past ten years in the interests of a local firm in the same line, has assumed charge of the Osborn Company's Columbus office. The company advise the trade that the establishment of a supply house at Columbus has proved a most satisfactory undertaking, and it will be their aim to carry more ample and complete stocks there than ever before, for the benefit of their customers in that district. Messrs. Osborn also advise us that W. M. Esterly has left their employ after 14 years' service, to engage in business for himself. The duties of the position formerly held by Mr. Esterly will be carried out by W. P. Abel.

SHEET METAL BOOKCASE.

BY H. M. S.

We have here represented a bookcase wholly made of sheet metal. It is so simple in its construction as to be easily made by any tinner of ordinary intelligence, as it requires in its manufacture only such tools and machines as are used in every well equipped tin shop. Such a bookcase possesses several advantages over the wooden case in common use. 1. It is fire proof. 2. It is vermin proof. 3. It is dust and dirt proof. 4. It is more convenient than the ordinary cumbersome wooden bookcase, and is easily moved from one place to another, without removing the books from the case, as it is made in sections of convenient size for handling, and very easily and readily adjusted to any position required. The sections are all made of a uniform size in length, hight and depth, so that in getting out a pattern for one we have a pattern for all.

There is another very important feature in this case. The glass doors with metal frames that protect the books in front are so constructed, with adjustable hinges at the sections above, as B C C B, &c., are back out of the way in the recess over the books.

In Fig. 2 is given a sectional view showing the general construction of the case. In section A B B A the door is shown closed. In all the sections above, *x y z*, is shown the position of the doors when open. F F F F F shows the sockets that hold the sections together on the back, which are still further shown in their relative positions in Fig. 3 by F′, &c.

Fig. 4 illustrates a section, half full size, of the end of one of the sections of the case. On the front, as shown by Q, there is formed a ½-inch round, which can be easily formed in a beading machine. U shows how the ends are connected with the back. G shows the position of the door, N the adjustable hinge, and M the ¼-inch steel rod upon which the door swings, extending across the front of the case and fastened at each end.

Fig. 5 shows a half full size section of case construction. G is a sectional view of the glass door with the metal frame construction and attachments, indicating how, when the door is swung up into a horizontal position and pushed back, the hinge slides back off the rod

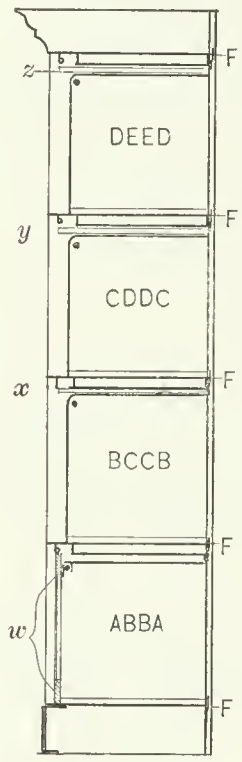


Fig. 2.

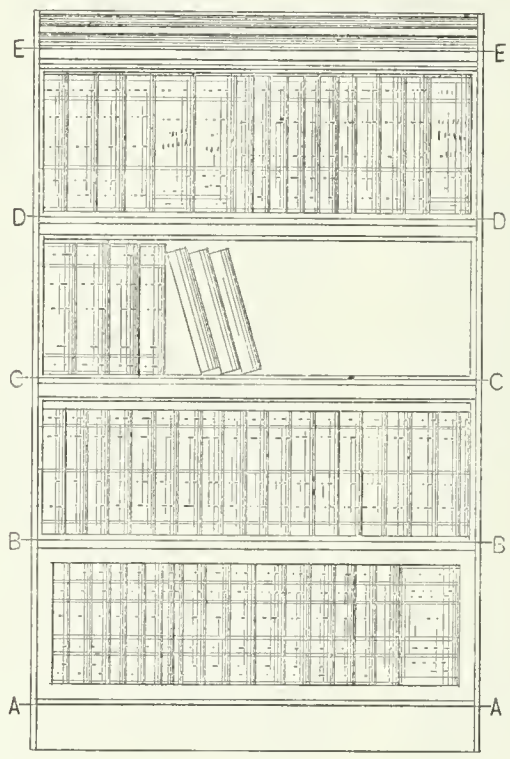


Fig. 1.

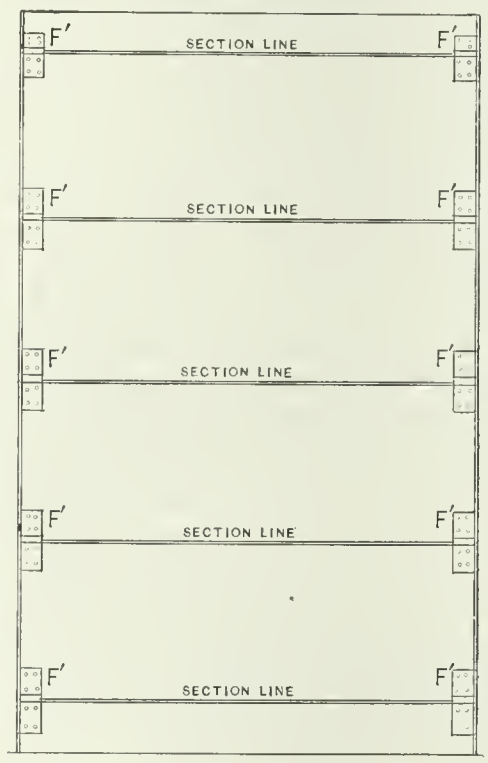


Fig. 3.

Sheet Metal Bookcase.—Elevations and Section.

top, that when opened from the bottom they will slide back into the recess over the top of the books. This arrangement removes the door out of the way while arranging or selecting books, a much more desirable way than the old method of having to use one hand in holding up the door while selecting books or arranging them.

Fig. 1 shows the bookcase with its various sections set up in place for use. A B B A, B C C B, &c., each represent a section of the case. Every section is interchangeable. In transferring the case from one place to another, if it is found to be too high, any one or more of the sections could be left out, the top cornice fitting equally well upon the top of any of the other sections, as they are all alike.

In taking apart the various members of the case it is not necessary to begin at the top. But, owing to the construction of the case, as hereinafter explained, it is necessary to know how to proceed. Lift the front of the cornice—above section line E E—about ½ inch. This draws the pins up out of the sockets at E E. Then draw it forward ½ inch. This relieves it from the sockets that hold it down on the back. It is now freed from its connection with the case and can be lifted off. In like manner proceed with the section above D D, and each of the other sections in their turn. It will be noted that the door on the first section A B B A is closed down over the front of the books, while the doors for all the and permits the door to move backward into the recess out of the way. As the door slides back in the channel at each end of the case, and these channels are made just wide enough to receive the thickness of the door to give it free action without binding, the hinge can never get out of place. Thus when the door is drawn out again the hinge always takes its position on the rod, and the door swings down into place. The dotted line shows the position of the door when the case is open. N′ indicates the position of the hinge on the door—one at each end—and M′ the ¼-inch rod on which it turns. N″ shows the position of the hinge when the door is open.

The bottom is made with a ¼-inch edge turned down on the two ends and back, with a ¼ x 1 inch iron bar in front. The top in front is constructed, as shown at G, with a 3-16 iron rod. O is a pinion, one at each end of each section, that fits down into the socket, as shown by Q in Fig. 4. This holds the front of the case at each sectional point firmly in position. F″ is a section one quarter full size of the lug attachment on the back and bottom of each section, as shown in Fig. 3, and Fig. 8 shows its face view. F‴ in Fig. 5 shows that portion of the lug attachment placed at the top of each section of the case, with a slot, as shown at C in Fig. 9. Into this slot the lug F″, fastened to the bottom of the next section above, slides and holds the two sections together, preventing the top section from tipping forward or side-

ways when the pinion O, as shown in Fig. 5, settles down into the socket Q, shown in Fig. 4.

A front view of the side, or one end, of a section of the case is given in Fig. 6; O′, the pinion at the bottom; L, a sectional view of the center of the end, and M″ the steel rod upon which the door swings. Fig. 10 is a section through *a b* in Fig. 6.

Fig. 7 is a sectional view of pinion construction that holds the sections together in front.

FLASHINGS.

It is reported that Messrs. Jackson and Seberlin of Cleveland, Ohio, are organizing a company for the purpose of manufacturing Bars and Sheets at Springfield, Ohio.

The American Bridge Company have been given contracts for the construction of buildings for the Jackson Iron & Tin Plate Company at Clarksburg, W. Va. Withrow & Co. of Charleston, W. Va., will put up the stacks, build the tinning houses and lay the foundations for the steel works.

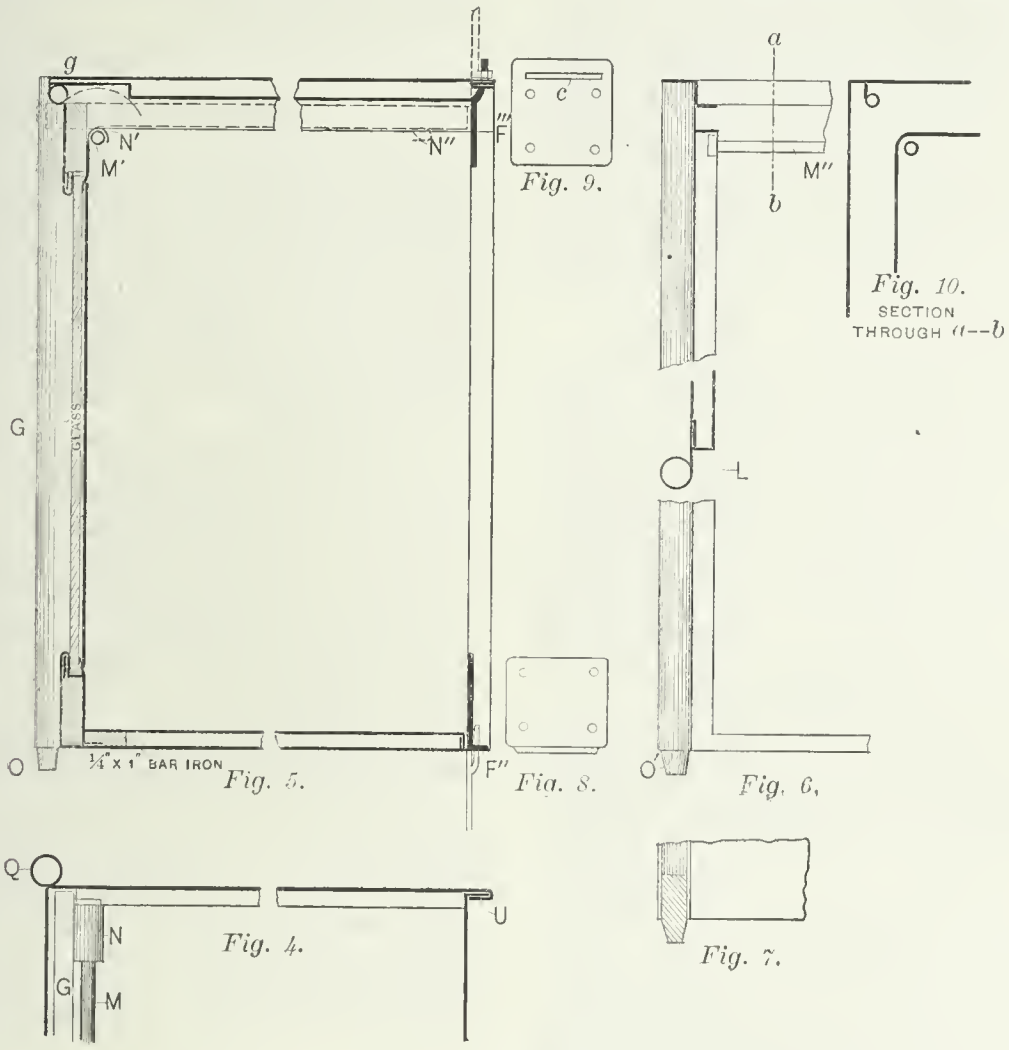
John F. Usher, formerly manager of the jobbing mills of the Ætna-Standard Iron & Steel Company, has been appointed manager of the new Laughlin Tin Plate mills, Wheeling, W. Va.

Berger Brothers, 231-237 Arch street, Philadelphia, Pa., are building a large warehouse adjoining their establishment and fronting on 100 to 106 Broad street. The addition was rendered necessary to meet the demands of their growing business. The building is of five stories and covers a space 55 x 75 feet. It is of substantial construction, calculated to support very heavy weights on each floor.

E. H. Friedrich of Holyoke, Mass., has in hand a large contract for the copper work and slate roofing on the tower of the Church of the Immaculate Conception at Easthampton, Mass. Mr. Friedrich also has a number of other important jobs on hand, including the metal work and slate roofing on the new Town Hall at Warren, Mass., and the Hospital for Consumptives at Rutland, Vt., and the skylights in connection with the new mills of the Farr Alpaca Company in Holyoke.

W. P. Devore of Cambridge, Ohio, advises us that the report that he, with A. W. Brown, would build a new Sheet mill at Cambridge, Ohio, is untrue. Messrs. Devore and Brown were connected with the Cambridge Iron & Steel Company, who were taken over by the American Sheet Steel Company.

We can state officially that the report that the Sharon Tin Plate Company would build ten more Tin mills, making a total of 30, or the same size of plant as the Shenango works of the American Tin Plate Company, at New Castle, is untrue. The Sharon Tin Plate Company have ten mills running, the output of which goes to the American Tin Plate Company under contract, and are also building ten more mills, which will be ready in October or November, at least. There is no intention, however, at the present time of adding any more mills other than those now under construction.



Sheet Metal Bookcase.—Details, Showing Construction.

A suit has been begun against the Pan-American Exposition Company for $9000 damages for alleged breach of contract by the firm of Merchant & Co. of Philadelphia, dealers in metal goods. The Exposition Company have joined issue, and the case will be tried at the September term of the Supreme Court. The complaint alleges that on October 18, 1899, the Exposition Company entered into a contract with Merchant & Co. to furnish all the metal tile used by the Exposition Company for roofing. The prices to be paid were at the rate of $6.95 a square, which means 100 square feet, for ordinary roofing and $12 a square for graduated tile for conical surfaces. It appears that the company were in doubt as to whether they would use that kind of roofing on all their buildings. They decided, however, to use it on the Service Building. It was agreed, says the complaint, that if, after the Service Building was finished, the company decided not to use the metal tiling on the other buildings, the company would pay Merchant & Co. at

the additional rate of $1 a square for that used on the Service Building. The metal tile was laid on the Service Building and paid for at the rates first mentioned. Then the company decided not to use it on the other buildings. Instead, the Philadelphia firm allege, the company entered into a contract with other builders for the same kind of tiling, ordering in all about 5000 squares, or 500,000 square feet. Merchant & Co. say they stood ready to fulfill their part of the contract, but the company refused to let them deliver the goods. By reason of the alleged breach of contract the Philadelphia firm state they have suffered $9000 damages, which they now seek to recover from the Exposition Company.

The Steel Strike.

One of the important developments in the strike in the past few weeks was the effort made by the Amalgamated Association to get the men at the Duquesne Steel Works to come out on strike and cripple the plant. A few men from the open hearth department joined the strikers, and they were immediately discharged, their places being filled by new men. The Duquesne Works started up again in full in all the departments, and has been running so right along and with no signs of trouble. The strikers, chagrined at the failure to bring the men out, have given up all attempts to make trouble at the Duquesne Steel Works, and will let that plant alone in the future.

Another important event was the failure of negotiations between the Conciliation Committee of the National Civic Federation and President Schwab of the United States Steel Corporation, which were held in New York City on Wednesday and Thursday. The final terms offered by Mr. Schwab were definitely refused by President Shaffer, although it is understood that he was counseled by President Gompers of the American Federation of Labor and President Mitchell of the United Mine Workers to accept them. As a consequence, orders were sent out by the Steel Corporation to start up all their mills at the earliest possible moment.

As far as the strike in the Pittsburgh district proper is concerned, it is about over. The only plant idle in that city on account of the strike is the Monongahela works of the American Tin Plate Company. The Pennsylvania Tube Works of the National Tube Company are idle, but steam is being raised and the plant will probably be started on Monday. Many of the men have intimated to the company that they made a mistake in going on a sympathy strike, having no real grievance, and they would like to return to work. For this reason the management anticipates no trouble in getting enough men to run the plant full when it is started. The Demmler Works of the American Tin Plate Company are ready to resume, and will be started up at once, the protection of the Sheriff of Allegheny County having been asked and secured. The Star Works in Pittsburgh, and the Crescent Works in Cleveland, of the American Tin Plate Company, are both said to be running nearly full now, and the company expect to have both plants in full running order in a few days.

The situation in the sheet mills shows steady gains for the American Sheet Steel Company. Injunctions have been issued against the strikers at the Reeves Works, at Canal Dover, and the men have been prohibited from doing picket duty. This will allow the company to operate the mill and at the same time assure protection to the men. Most of the equipment of the Chartiers Works has been removed to Leechburg, and it is probable several other plants will be taken to the Vandergrift district, but definite action has not yet been taken on this by the company.

The nonunion hoop mills of the American Steel Hoop Company are all running full now with the single exception of the Lindsay & McCutcheon Works in Allegheny. No effort has been made to start up the idle mills of this concern, and probably none will be until the men have shown a desire to return to work.

Every day that goes by shows more decisively that the strike, so far as the Amalgamated is concerned, is lost, and it would not be surprising if the men were ordered almost any day to return to work. J. D. Hickey, a former official of the Amalgamated, and an employee of the Federal Steel Company, gave out a statement in which he says that President Shaffer made a serious mistake in ordering the strike, and that the proposition of the United States Steel Corporation made at the Hotel Lincoln conference on July 13 should have been accepted. President Shaffer also admits now that this proposition should not have been rejected by the Amalgamated, and that he made a mistake in not accepting it. President Shaffer knows that his association is defeated, and that the only way he can, perhaps, save a part of his organization is to order the men back to work, and then accept from the United States Steel Corporation officials whatever terms they may see fit to offer, as regards recognizing the Amalgamated Association in the union mills that were signed for last year and that are still idle.

The Value of Acetylene.

During the months of April and May, 1899, says *Engineering* of London, some experiments were tried on the value of acetylene in a small light of the sixth order at one of the batteries guarding the entrance of the harbor at Genoa. These having proved very satisfactory, the Italian Minister of Marine suggested that the inventor of the apparatus should repeat them on a larger scale at the first-rate light of La Lanterna, the principal light of Genoa Harbor.

The test was to be carried out at the inventor's own expense, who had to guarantee better illumination than that given by the petroleum burners of the lighthouse, and a constant light without smoke or interruption for 15 hours at a time. The offer was accepted. An apparatus with four separate generators was installed, and for a period of 1000 hours, or 100 days of ten hours each, during October to January of last winter, the lighthouse was worked with the new gas without the slightest difficulty.

At a distance of 40 nautical miles from Genoa is the electrical light of Tino, and it was observed that while the Tino light could never be seen at Genoa, the Genoa acetylene light was visible at Tino. It is also stated that the annual cost of maintaining the electrical installation at Tino is 26,000 francs, whereas, from the experience gained at Genoa, it could evidently be supplied with acetylene for 1200 francs per year. Acetylene lights were simultaneously tried at Leghorn and Civita Vecchia, but no report as to their behavior has been published.

New Lighting Methods in England.

A London correspondent writes as follows: It is interesting to observe that the municipal and other authorities in England are still experimenting upon various forms of lighting for streets and vehicles. The "Phos" Acetylene Company have received a contract for lighting the London 'buses with acetylene lamps. These lamps are patented by this syndicate, and are proving very serviceable, not only for 'buses, but also for street lighting. Contracts have also been secured in various mining centers, while the same company are sending out workmen to Venezuela and Brazil to start the system over there, contracts having already been secured. Another scheme of lighting is that known as the "Kitson System," which was brought out in 1896 in the United States, and has now spread to the Continent, to Japan and China. The beauty of this or any similar system is that it is not necessary to obtain Parliamentary powers, such as are necessary for gas and electric lighting, as no mains or cables need be laid, nor need the roads be torn up. Judging by the amount of business that has been secured by both of these firms in this country during the past two years, it would seem that there is money in it.

THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

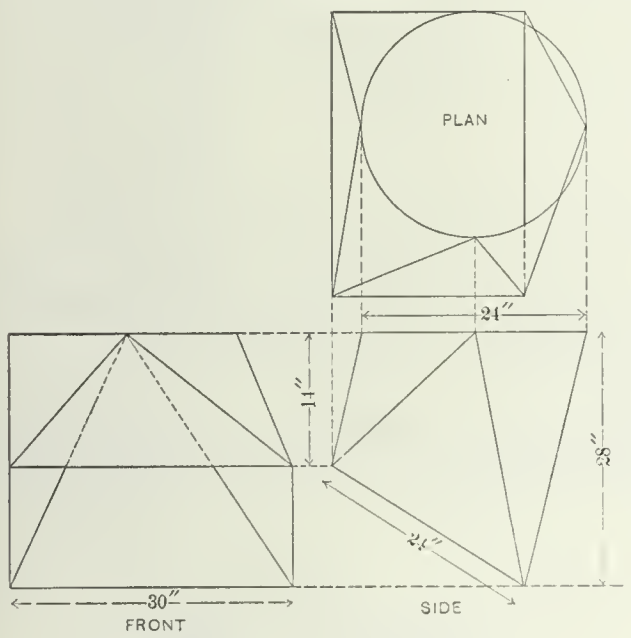
Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

TRANSITION PIECE FROM RECTANGULAR TO ROUND.

From G. G. B., Anniston, Ala.—I inclose herewith a sketch showing the plan and elevations of a transition piece from square to round, with both ends mitered. Please show in the columns of *The Metal Worker* how to develop the patterns for the same.

Answer.—The accompanying illustration is a reproduction of our correspondent's diagram. By the expression "both ends mitered" we presume that he refers to the inclination of the two ends or bases to the sides, as shown in the side elevation. This feature, however, has no influence in the method of solving the problem, as the pattern must be obtained by triangulation. The first fact noted from an inspection of the front elevation and plan is that the center of the upper or round base is not on either center line of the lower or rectangular base, and since the design does not therefore consist of symmetrical halves, the pattern for the entire transition piece must be developed.

It is evident from the several oblique lines, which appear in the elevations and plan, that our correspondent



Transition Piece from Rectangular to Round.

has at least a general idea of triangulation, as these lines show that the surface consists of four plain triangular sides and the envelopes of a quarter each of four different scalene cones; the plain and the conical surfaces being alternated with each other in the order of the plan. The bases of the triangles forming the flat sides of the transition piece are the sides and ends of its rectangular base. The apexes of the triangles are at the four points marking the quarters of the upper base, at which points the four conical surfaces forming the corners of the transition piece meet. Subjects similar to this have been treated in our columns on former occasions, and since the principles governing the development are entirely covered in "The New Metal Worker Pattern Book," we will refer our correspondent and readers to certain problems in that work, merely adding a short description of the course to be pursued in developing the pattern.

Problem 182 shows a design embodying all the conditions of that above given except that it consists of symmetrical halves. Although the plane of its round end, as shown in Fig. 583, is at right angles to its sides, the rectangular base is oblique to them, thus producing cones of unequal altitudes at the corners. Problem 179 shows a similar design in which the two bases, although parallel with each other, are not on a common center line, but the method therein described is the more applicable to our correspondent's case.

The operation of developing the pattern consists, first, in dividing each of the four quarters of the upper base into any convenient number of equal spaces and drawing lines from the points of division in each to the adjacent angle of the lower base, as shown in Fig. 575; second, in the construction of four diagrams of triangles (one for each cone, as shown in Fig. 576), whose bases are equal to the several lines just drawn, the hypotenuses of the triangles when obtained being the correct distances across the pattern, between corresponding points of the plan, and finally the construction in consecutive order of the triangles composing the pattern in accordance with Geometrical Problem 36 on page 45, the sides of the same being the hypotenuses of the triangles in the four diagrams, while their bases are the spaces of the plan. The altitude of the triangles in the two diagrams corresponding with the cones of the upper or short side is 14 inches, while that of the two for the cones of the lower or longer side is 28 inches, as shown upon the side elevation. The outer sides of each of the two outer triangles of each quarter cone are, of course, one and the same with the adjacent sides of the large intermediate triangles, two of whose bases are 24 inches, the other two being 36 inches. The method of developing the pattern is shown in Fig. 577, the description of the same beginning near the bottom of page 332.

TROUBLE WITH DRYING OVENS.

From Wildel.—For the information of "D. & K.," who ask in *The Metal Worker* of August 31 for an improvement in the heating power of a drying oven, I would say, cover it with boiler covering, then erect a division in the middle of the oven, from the bottom below the false bottom to 6 inches from the top of the oven. Take your heating pipe straight up from the stove and set the middle of one division directly over the hot air pipe. Now, from the middle of the other division, conduct the air out of doors as quickly as possible. The air for supplying your oven with heat should be drawn out of doors and passed over a shallow box of quicklime, which should be renewed as fast as it becomes damp. This box should be 2 feet wide, and a space of 1 inch should be left between the top of the lime and the inside top of the box. Thus the air will be made dry before being heated and will be very effective in drying quality.

From A. J. W., Philadelphia.—I have noticed the reply in *The Metal Worker* of August 31 to your correspondents, "D. & K.," Lathrop, Mo., in regard to trouble with drying oven, and would say that the answer you give there is entirely correct and I can indorse it in every particular.

TRAPPED WITHOUT CONSIDERATION OF REGULATIONS.

From D. C. E., Hooksett, N. H.—I was called upon lately to fix a trap where a set of wash trays and sink are connected to a 5-inch round trap. The inlets from the trays and sink are of 1¼-inch pipe and connect with the trap within 2 inches of each other. The outlet is made of 1¼-inch pipe. The waste stack, which is 2 inches, does not run through the roof. When the tubs are emptied air is sucked in with the water through the sink pipe. The stack cannot be run through the roof or a back air pipe connected with the trap. If the outlet is enlarged to 2 inches or a partition is put in the trap to stop the rotary motion in it, will it stop the air entering and the noise that it makes?

Answer.—Such an arrangement as described would be a violation of the regulations of some cities which require a separate trap for each fixture. So long, however, as the trap seal is not broken the trap performs its duty, and that is the main thing. A back air pipe from the trap, through which air could enter, would stop the air passing down the sink pipe simply because it would be easier to enter the other way.

If the pipes from the trays and the sink are of any great length the decomposition of grease in them will cause unpleasant odors unless flushed frequently. If the inlet pipes are connected at the bottom of the trap and the outlet at the top, the water seal may be deep enough to reduce the trouble from the head thus gained. If this is not effective a back air pipe of the full size of the inlet pipe should be devised in some way. Enlarging the outlet pipe would increase the noise.

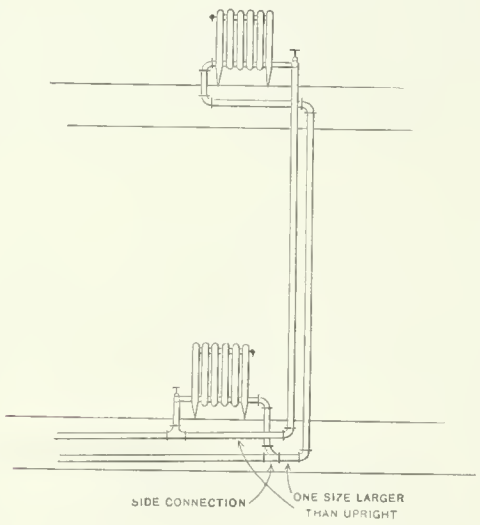
QUALITY OF WINDOW GLASS.

From C. F. F., Waukesha, Wis.—Please give some simple positive manner of testing window glass after it is set in the sash. The glass in question will average 26 x 26 inches in size. What I want to find out is whether it is A quality and double strength.

Answer.—The thickness can be determined by the use of a suitable pair of calipers. Single thick glass is 1-16 inch, while double thick is ⅛ inch thick. The quality is not so readily determined, but double thick glass is made in A A, A and B qualities, determined by the clearness and absence of curves, waves or marks. The quality known as A should be very clear, so as to give the impression when clean that the window is open. Of course, glass of the same grade from different factories varies in clearness and color, and it would be largely a matter of expert opinion as to the quality of the glass when once removed from the makers' package.

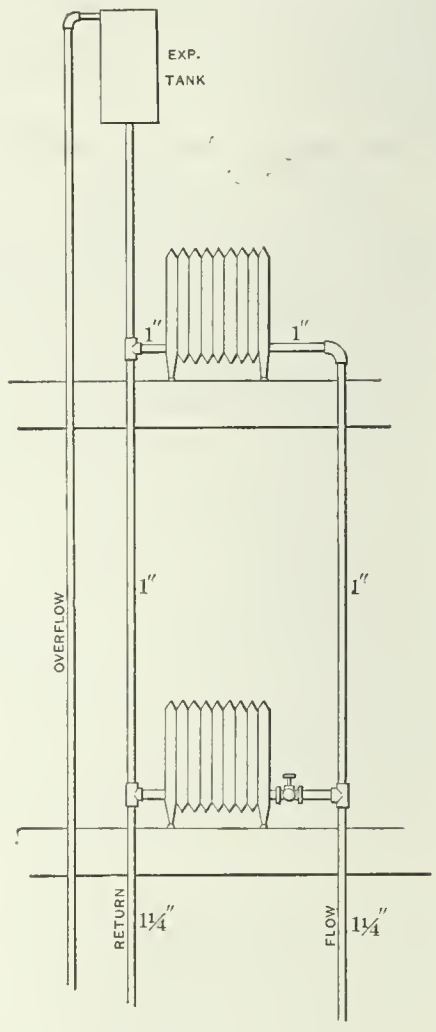
HOW SHOULD RADIATOR BE CONNECTED?

From W. M. Mackay, New York.—I notice in your issue of the 24th ult. a suggestion of method and sketch for connecting two hot water radiators on different floors. In my experience the sketch is faulty in three points. There is one more elbow than is necessary on the flow connection, increasing the friction and requiring a higher temperature to circulate. The second-floor radiator should be fed at the bottom instead of at the top. I find that it is no further from the bottom of a radiator to the top of it inside than it is on the outside. The connection at the bottom generally looks better, will always work as well and is not liable to become air locked by an accumulation of air in the top of the radiator, but will circulate as long as there is any water in the radiator. Then I find that when there is any trouble with radiators connected in this way the trouble usually occurs at the point where the two returns connect together, and I find that this trouble can be remedied by connecting the return of the first-floor radiator into the side instead of into the top of the horizontal return main. I inclose a sketch showing my method of connecting two radiators in the positions mentioned.



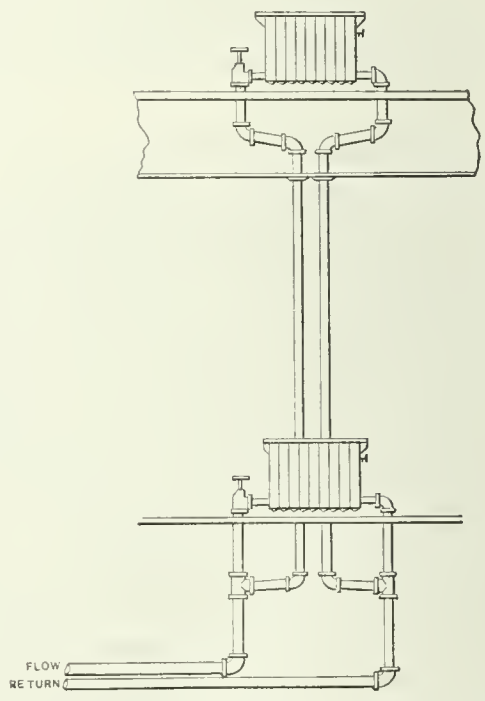
How Should Radiator Be Connected?—Plan of W. M. Mackay.

From J. H., Richmond, Maine.—Referring to the inquiry of "I. R.," in *The Metal Worker* of August 10, as to connection of radiators on lower and upper floors, I submit herewith a sketch showing a job which I have just done and which works all right. As will be seen, I put a valve in the flow end of the radiator in the lower room. In the upper room I put the expansion and did not place any valve, for the reason that if it should chance to be closed in cold weather it might get frozen. Perhaps this is not the right way to make the connections, but in this case it circulates readily.



How Should Radiator Be Connected?—Plan of "J. H."

From A. H. P., Columbia, Pa.—In answer to the inquiry of "I. R." of Norwich in *The Metal Worker*, August 10, I would advise him to try the plan shown in the accompanying sketch, which, I think, will work satisfactorily. There may be a still better way, and I would be pleased to have other readers of *The Metal Worker* express themselves on their methods.



How Should Radiator Be Connected?—Plan of "A. H. P."

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is dull and about ¼c. lower.

Copper is quiet and unchanged.

Pig Lead shows no change in price or demand.

Spelter is quiet and unchanged.

Antimony shows no change.

Nickel is firm and unchanged.

Aluminum is in good demand at former prices.

Tin Plates are still scarce and high in price.

Black and Galvanized Sheets continue in heavy demand, and are scarce and high for spot delivery.

Russia Iron is about ½c. higher.

Old Metals are dull and without change.

Sheet Copper is in good demand and firm in price.

Sheet Zinc is unchanged and in moderate demand.

Pig Iron is moving in good volume, with prices showing more firmness.

Hardware continues in active demand, with prices well maintained.

Wrought Iron Pipe is still very scarce, with prices stiff all along the line.

Hot Air Registers, in new list, show an advance of 10 per cent. on larger sizes.

Solder has been marked down ½c. a lb.

Dripping Pans have been advanced on scarcity of material.

Poultry Netting is very firm; manufacturers have withdrawn quotations.

Heavy Hardware is advancing in some lines, owing to scarcity of material.

Tinned Iron Spoons are higher in price.

Sheet Asbestos has been reduced in price, on the strength of fuller supplies.

Tinware and Japanned Ware have been marked up 10 per cent.

Galvanized Ware has also undergone a slight advance.

Wire Nails are in good demand at unchanged prices.

Cut Nails have been advanced 5 per cent.

Linseed Oil has declined another 8c. a gallon.

Spirits Turpentine is firm, owing to higher stocks.

METAL MARKET.

NEW YORK, September 6, 1901.

Pig Tin.—Since our last report the premium on spot Tin has disappeared entirely, owing to heavy arrivals. Prices have declined about ¼c. per lb. Jobbers are now quoting small lots of Straits Pig at 26¾c. to 27c. per lb. The demand is of a very moderate character. The prolonged strike in the Tin Plate mills has cut off the heaviest channel of consumption, and stocks of Tin are constantly piling up. The monthly statistics published on September 1 are not very favorable. The shipments from the Straits are given as about 600 tons larger than for the same period last year. The total visible supply on August 31 is placed at 16,327 tons, which is just about the same amount recorded a year ago. Statistics for the United States, as compiled by the New York Metal Exchange, show the total visible stocks here and afloat as 5772 tons.

Copper.—This metal is in the same position in which it has been for many weeks. Prices are unchanged except that the shading which is being indulged in by some of the smaller interests is becoming more marked. Small lots of Lake Ingot continue to be quoted at 17¼c. to 17½c. per lb. and Casting Copper at 16¾c. to 17c. It is generally known in the trade that the stocks of consumers are very low; thus far no attempt has been made to lay in a sufficient amount of the metal to cover fall requirements. If consumers continue to buy from hand to mouth, as they have been doing for some months, a continuance of the present stagnation of trade may be looked for. If, however, the consumers come forward with good inquiries to cover their fall requirements it is expected that prices will immediately advance. The monthly statistics show very unfavorably. Exports for the month were only 6408 tons, and the total decrease this year is now 46,736 tons, as compared with last year. Arrivals were very heavy.

Sheet Copper.—A good amount of business is being done in Sheet Copper and prices remain firm on the basis of 21c. per lb., from store.

Pig Lead.—There is absolutely no change in the position of this metal. Business is rather quiet. The prices quoted by the American Smelting & Refining Company continue to rule, and small lots of American Pig are quoted at 4.60c. to 4.62½c. per lb. St. Louis reports indicate the movement in Pig Lead as being limited and prices as showing no change.

Spelter.—But little demand is reported for this metal, which is very quiet at unchanged prices. Good Western brands in small lots rule at 4.45c. to 4.50c. per lb. No change is noted in the St. Louis market.

Sheet Zinc.—The demand for Sheet Zinc is of moderate proportions and prices show no change. Jobbers quote 600-lb. cask lots at 6¾c. per lb and smaller quantities at 7c.

Antimony.—There has been no change in this market. Cookson's in small parcels is quoted at 10½c. to 11c. per lb., and Hallett's at 8½c. to 9¼c.

Nickel—Is unchanged, the price for small lots being quoted at 60c. to 65c. per lb.

Aluminum.—A good demand at prices which have ruled for a long time past is reported. No. 1 Ingot, guaranteed over 99 per cent. pure, is quoted in small lots at 37c. per lb., and in 100-lb. lots at 35c.

Tin Plates.—The situation in the Tin Plate market is without change. It is a waiting market on both sides. Only a very small business is being transacted, as supplies available for prompt delivery are exceedingly light and consumers are buying only as dictated by their absolute requirements. Throughout the entire strike the prices of the American Tin Plate Company have not changed; but this is not of much importance, as they have been entirely unable to make deliveries of the sizes for which there was the greatest demand. Nor even if the mills are again put in operation within a reasonable time will they be able to relieve the scarcity this side of 1902. In certain sizes of Coke Plates the scarcity amounts to an absolute famine, and users are forced to buy anything in the line of Bright Tin that they can lay their hands upon, and at such prices as would have seemed to be utterly exorbitant a few weeks ago. Supplies of Welsh Tin Plate are coming in with more or less regularity, but they do not relieve the situation to any appreciable extent. Nearly all the stock that is imported has been appropriated by the larger consumers and the exporting packing interests. Quotations are merely nominal, but jobbers in New York and corresponding points are asking at least $7 to $7.50 per box for American Bessemer Plates, IC, 14 x 20, and even higher figures are being paid in some instances. The Welsh market has not changed during the week.

Sheets.—The demand for both Black and Galvanized Sheets continues heavy and the supplies do not, so far, show any marked enlargement. However, the output of Sheets is said to be steadily increasing, both by the American Sheet Steel Company and the independent mills, several of the latter being just about ready to

start. Therefore the situation shows some indications of improvement within the next few weeks. Sheets for prompt delivery are practically impossible to secure and prices rule very high. Some of the mills are not quoting on early deliveries at all. Galvanized Sheets are scarcer than Black and prices for both varieties are firmly held. Jobbers in this vicinity quote No. 27 Black One Pass Cold Rolled Soft Steel Sheets at about 4.20c., and Galvanized Sheets at 60 per cent. off the list. Owing to the restriction in the production of American Patent Planished Sheets the demand for genuine Russia Iron has shown a decided increase. Jobbers who handle this material have advanced the price about ½c., quoting small lots at 10½c. to 11c. per lb.

Chicago advices are as follows: The situation in Sheets has not yet been relieved, the supply being far below the requirements of the trade. The independent mills are unable to make prompt deliveries, the mills of the American Sheet Steel Company are only supplying about 60 per cent. of their regular volume of business and jobbers' stocks in this city are very badly broken. Buyers who are compelled to make purchases find the market irregular, prices varying according to the size of a merchant's stock, the quantity wanted and other conditions. No. 27 Black Sheets are quoted at 4c. to 4.25c. and Galvanized Sheets at 65 to 60 off.

Old Metals.—The market is dull and without change in prices. Dealers are paying about the following for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 14½c.
Light and Tinned Copper	per lb. 12½c.
Heavy Brass	per lb. 9 c.
Light Brass	per lb. 7½c.
Lead	per lb. 4 c.
Tea Lead	per lb. 3¼c.
Zinc	per lb. 2¾c.
No. 1 Pewter	per lb. 18½c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	$8.00
Wrought Iron Scrap, per gross ton	$10.50 to 11.00
Heavy Cast Scrap, per gross ton	10.00 to 10.25
Stove Plate Scrap, per gross ton	6.75 to 7.00
Burnt Iron, per gross ton	5.00 to 5.50

THE PIG IRON MARKET.

New York.—Generally the market is quiet and steady. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $14.50 to $15; No. 2 Foundry, $14.25 to $14.50; No. 1 Soft, $14.50 to $15; No. 2 Soft, $14.25 to $14.50; No. 3 Foundry, $13.25 to $13.50; No. 4 Foundry, $12.75 to $13.25.

Chicago.—Business is picking up materially although transactions the past week have not covered any large quantities; the demand for fair sized lots is steadily increasing. It is remarked as a good indication of improving business that mail orders which are sent in without solicitation are becoming much more frequent. Quite a number of contracts for Foundry Iron have been closed which run up to 1000 tons, and inquiries are being received for deliveries running well into next year. Local foundrymen are buying considerably more Iron as their working forces are increased. Prices are firm, but unchanged. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon	14.90 to 15.15
Southern Coke, No. 1	14.90 to 15.15
Southern Coke, No. 2	14.15 to 14.40
Southern Coke, No. 3	13.65 to 13.90
Southern Coke, No. 1 Soft	14.65 to 14.90
Southern Coke, No. 2 Soft	14.15 to 14.40

Philadelphia.—The market is not as active as makers of Pig Iron would like to see it, but prices are fairly steady. Metal for prompt shipment in small quantities is rather badly wanted, tonnage of this class being in the aggregate quite considerable; but for long deliveries buyers are inclined to postpone action. There is an impression that they will be able to buy to better advantage a little later on, and they therefore make only a tardy response to requests for bids for winter shipment. At the moment Iron is by no means abundant, but the unsettled outlook has a tendency to check immediate operations. Prices are more variable than usual, but the range would be about as follows, for Philadelphia and nearby points: No. 1 X Foundry, $15.50 to $16; No. 2 X Foundry, $14.75 to $15.25; No. 2 Plain, $14.25 to $14.75.

CHICAGO REPORT.

Scrap Iron and Steel.—Mills are buying cheap stock, such as Borings and Turnings, but other materials are quiet. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap	$10.50 to $11.00
Machinery Cast	10.00 to ....
Malleable Cast	10.00 to 11.00
Stove Plate (free from burnt)	7.00 to 7.50
Burnt Iron and Grate Bars	5.50 to 6.00
Sheet Iron and Hoops	6.00 to 7.00
Plow Steel	9.00 to 10.00
Breaking Stock	9.00 to ....
No. 2, such as Shovels, Hoes, &c	.... to 7.00
Old Boilers—whole (Iron)	6.00 to 7.00
Old Boilers (Iron) cut in single Sheets and Rings	9.50 to 10.00
Old Gas Pipe and Boiler Tubes	10.50 to 11.00
Cast Borings	4.00 to 4.25
Turnings	9.00 to 9.50
Horseshoes	11.00 to 12.00

Old Metals.—The demand is fair but not strong enough to affect prices. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	14¾c.
Copper Bottoms	13¼c.
Copper Clips	14¼c.
Red Brass	13⅜c.
Yellow Brass	9½c.
Red Brass Borings	11½c.
Yellow Brass Borings	8¾c.
Light Brass	7¾c.
Pipe Lead	4 c.
Tea Lead	3½c.
Zinc	2⅜c.
Pewter, No. 1	19 c.
Pewter, No. 2	10 c.

Old Rubber.—No special movement is reported. Dealers' buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$23.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7¾c.
Rubber Car Springs	....	4¾c.
Inside Bicycle Tubing	....	21 c.
Outside Tubing	....	7¼c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—Trade is light. Prices are now 10c. higher than last month, and up to the full rate of the spring months. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis.	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo.	8.25	8.50

Avery Stamping Company, Cleveland, Ohio, who manufacture a line of Seamless Steel Wares trademarked Never-Break, have one article patented in both the United States and foreign countries; this is the children's Safety Sled Skates, the words Sled Skates being also registered as well as the trade-mark. In the way of cooking utensils they make Kettles, Griddles and Spiders from sheet steel, the density of which is such that they are said not to absorb grease, these goods being used in the United States Army and Navy at home and abroad. Other goods similarly branded are Garden Trowels and Post Hole Diggers. The trade are advised by the company to place their orders for Sled Skates at once if they wish to avoid delays in delivering.

The Stover Mfg. Company, Freeport, Ill., manufacturers of Wind Mills, Feed Mills and Hardware Specialties, have been so driven with business this summer that they are now 60 days behind with their orders, although running their factory to its utmost limits. They are erecting a new plant on a property comprising 21½ acres in a desirable locality adjoining the city of Freeport, and propose to have the largest plant for the manufacture of Wind Mills and Feed Mills in any country in the world. This immense plant is now nearing completion and will soon begin to receive its equipment of electric, special and automatic machinery.

NOTES ON PRICES.

Wrought Iron Pipe.—There has been no change in the Wrought Iron Pipe market within the past week. Prices have remained as before and stocks have continued to dwindle. The local jobbing trade are adhering strictly to the prices named on August 23, and on the sizes which are reported to be out of the market it is said that a premium of 10 per cent. is being asked by those jobbers who are lucky enough to have any in stock. We were told this week of a Pittsburgh jobber who telephoned to a New York supply concern offering any quantity of any or all sizes of Pipe at a price which equaled an advance of 20 per cent. over the prices quoted by the mills before the strike was declared. If the Pittsburgh party has an unlimited supply of Pipe on hand to be put on the market from time to time at prices showing such handsome profits, it looks as though there was some sort of understanding between the powers that make and the powers that sell; that this is a splendid opportunity to make money at the expense of the unwary consumer who neglected to cover himself for his necessary supplies in the Pipe line. Aside from this incident the market shows a narrowing of jobbers' stocks and also a greater demand for all sizes of Pipe used in the heating business. It looks as though the trade will undergo some hardships before the Pipe situation improves.

Plumbers' Brass Goods.—No change has taken place in the market for Plumbers' Brass Goods. Prices remain very stiff and there is considerable scarcity. The meeting of the Plumbers' Brass Goods Manufacturers' Association, which was to have been held in Detroit, Mich., on Wednesday, September 4, was postponed to Friday, September 6. It is said by some in the trade that a further advance will be announced as a result of this meeting, but others of equal judgment greatly doubt if prices can reasonably be put any higher under present conditions.

Hot Air Registers.—The manufacturers of Hot Air Registers have adopted a new list on these goods, which went into effect September 2. It is understood that manufacturers representing about 80 per cent. of the production of Registers, Ventilators, &c., have agreed to uphold the new list. The new prices show an advance amounting to about 10 per cent. in some of the larger sizes of Registers, while others are unchanged. It is really a readjustment rather than a general advance in prices. The demand for Registers this season has been unusually large and many of the manufacturers are hard pushed to fill the orders on their books, especially as the supply of raw material has been restricted by the Steel strike. It is thought likely that the present prices will be firmly maintained. The Tuttle & Bailey Mfg. Company of New York City have issued the following discount sheet applying to the new and revised price-list of 1901:

Black Japanned Registers, Ventilators, Faces and Borders	70 %
White Japanned Registers, Ventilators and Faces (separate list)	70 %
Bronzed Finishes in imitation of Gold, Silver, Copper and Bronze	70 %
Nickel Plated	70 %
Electroplated in Brass, Bronze, Copper, Oxidized Silver	70 %
Wall Frames	70 %
Heavy Round Gratings	70 %
Ventilating Plates	70 %
Cold Air Inlets	70 %
White Porcelain Enamel Registers, Ventilators, Faces and Borders	60 %
Solid Brass and Bronze Metal Registers, Ventilators, Faces and Borders	50 %
Dampers	50 %
Soapstone Borders	30 %
Slate Borders	50 %
Specialties.	
Pedestal Registers	50 %
Carved Ceiling Ventilators for Churches	50 %
Chandelier Ventilators	50 %
Perfection Sash Ventilators	50 %
Screen Faces	50 %
Trotter Borders	50 %
Summer Pieces	50 %
Stove Pipe Registers	50 %
Thimble Ventilators	50 %
Revolving Registers	50 %
Screens for Steam Pipes	50 %
Stove Pipe Thimbles	50 %

The terms are 2 per cent. cash 10 days, and 60 days net. No freight is allowed. On all orders of less than $10 the cost of boxing will be added.

Asbestos Sheets.—The scarcity of Canadian Asbestos, which forced up prices to a remarkably high point toward the close of last year, has been relieved to a considerable extent by the opening of some of the older mines, and supplies have now become more liberal. In consequence, the prices of goods manufactured from the lower grades of Asbestos have receded. Asbestos Sheets, such as are used by the Furnace trade and the manufacturers of Steel Ranges, have declined in price from 33 1-3 to 40 per cent. since the beginning of the year. The goods made from higher grades of Asbestos, however, are unchanged in price, not having been advanced in the same ratio as those manufactured from the poorer grades. Sheet Asbestos is classed among the goods manufactured from the lower grades.

Tinware, &c.—Japanned and Pressed Tinware and Tinware Trimmings have been advanced in price 10 per cent. by the Metal Ware Association. Galvanized Ware has also undergone a further slight advance. The scarcity of Sheets and Tin Plates, which is becoming more pronounced as the strike at the mills is prolonged, is causing serious inconvenience to the makers of Tin and Sheet Metal Goods, who are unable to secure further supplies of material and, in consequence, are forced to decline new orders while unable to fill those already on their books. Those concerns that are in the happy position of making their own Sheets and Tin Plates are rushed with orders, which keeps their factories running at full pressure. The outlook favors still higher prices for all Sheet Metal Ware.

Peerless Enameled Ware.—The Lalance & Grosjean Mfg. Company, 19-21 Cliff street, New York, have issued, under date of September 2, 1901, a revised price-list of their Peerless Enameled Ware. The present list covers the entire line of goods manufactured by the concern in this class of Ware. It is not illustrated, but is intended as an addition to their regular Enameled Ware catalogue, where all the goods in this line are fully illustrated. The prices given on this Peerless Enameled Ware are subject to a discount of 70 per cent.

Dripping Pans.—The scarcity of material is affecting this line and manufacturers have generally made a moderate advance in prices.

Poultry Netting.—Manufacturers are showing a good deal of conservatism about accepting orders for next season, and some quotations which have recently been current have been withdrawn. The tone of the market is firm.

Heavy Hardware.—In several lines the difficulty of obtaining material is causing the withdrawal of prices or the announcement of higher ones. In this way Screw and Strap Hinges have recently been advanced about ¼ cent per pound. Manufacturers of Vises and many other goods are also troubled in the same way. Goods into the manufacture of which Sheet Steel enters are generally scarce and show a marked tendency toward higher prices.

Tinned Iron Spoons.—This is a line which feels the effect of the existing market conditions. The manufacturers find it difficult to secure sufficient raw material to meet their requirements. The tone of the market is decidedly firm and prices are quotably higher. Some manufacturers who have not made actual advances have withdrawn prices.

Solder.—The decline in Pig Tin values has caused a softening in the price of Solder. Jobbers are now quoting Half and Half, guaranteed, in small lots, at 18½ to 19 cents per pound, and No. 1 at 15 to 17 cents, according to quality.

Wire Nails.—The Wire Nail demand keeps up in good volume, with no signs of decreasing. Concessions in prices are reported at some competitive points, especially in the South, although the general tone of the market is

firm. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. discount for cash in 10 days:

To jobbers in carload lots.....$2.30
To jobbers in less than carload lots..... 2.35
To retailers in carload lots..... 2.40
To retailers in less than carload lots..... 2.50

Small lots from store, New York, are quoted at $2.60 per keg.

Cut Nails.—At the monthly meeting of the Cut Nail Association an advance of 5 cents per keg was made in the price of Cut Nails, to take effect at once. It is hard to determine just what the prevailing opinion at the meeting was regarding this action. Some members of the association, it is reported, favored an advance of 25 cents per keg, while others are of the opinion that the measure was a half hearted one, as some mills have not notified their customers of any change in price. The trade express different opinions regarding the advance. Some consider it ill advised, because the association had not been successful in maintaining former prices. The advance should have been at least 10 cents per keg, according to the views of others. Some of the mills have little Plate from which to cut Nails, and they believe that if the strike was to end at once it would take 60 days to get even a fairly good start. Difficulty is experienced in getting prompt shipments of Cut Nails, while 8 and 10 penny Nails are particularly scarce. Quotations are as follows, f.o.b. Pittsburgh, plus the actual freight to point of destination, terms 60 days, or 2 per cent. off in 10 days:

Carload lots.....$2.05
Less than carload lots.....$2.10 to 2.15

The advance of 5 cents per keg came as a surprise to the New York trade. It is too early to state just what effect the advance will have upon this market. Up to the present time some jobbers have made no change in prices from store, while others have announced an advance of 5 cents per keg in their prices. New York quotations for carload and less than carload lots are based on the above prices, to which Pittsburgh freight is added:

Carload lots on dock.....$2.18
Less than carload lots on dock.....2.23
From store.....$2.18 to 2.30

Plain Wire.—There is no falling off in the former heavy demand for Plain Wire, so that mills are unable to accumulate stock. Quotations are as follows, f.o.b. Pittsburgh, terms 60 days, or 2 per cent. off for cash in 10 days:

Base sizes.	Plain.	Galv.
To jobbers in carload lots	$2.25	$2.65
To jobbers in less than carload lots	2.30	2.70
To retailers in carload lots	2.35	2.75
To retailers in less than carload lots	2.45	2.85

The above prices are for the base numbers, 6 to 9. The other numbers of Plain and Galvanized Wire take the usual advances.

6 to 9	Base					$0.40	extra.
10	$0.05	advance	over	base		.40	"
11	.10	"	"	"		.40	"
12 and 12½	.15	"	"	"		.40	"
13	.25	"	"	"		.40	"
14	.35	"	"	"		.40	"
15	.45	"	"	"		.75	"
16	.55	"	"	"		.75	"
17	.70	"	"	"		1.00	"
18	.85	"	"	"		1.00	"

For even weight bundles, 50 pounds and over, 5 cents per bundle advance on above.

In New York small lots of Plain Wire from store are quoted at 2.60 cents and Galvanized at 3 cents.

White Lead.—The further decline in the price of Linseed Oil last week keeps the Lead market in an unsettled condition. Business in White Lead in Oil is confined largely to prompt shipments to supply nearby requirements. It is anticipated that a large amount of painting will be done, especially next month. Quotations are unchanged, as follows: In lots of 500 pounds or over, 6½ cents; in lots of less than 500 pounds, 7 cents per pound.

Linseed Oil.—Another reduction in the price of Linseed Oil of 3 cents was made August 29, followed by a further cut of 5 cents on September 5, making a total decline of 32 cents in four weeks. Well informed Oil men believe that Oil will go still lower than the present quotations, owing to the prospects of a large Flax Seed crop, and to the competition outside the combination. Quotations are as follows: City Raw, in lots of five barrels or more, 50 cents per gallon; in lots of less than five barrels, 51 cents. Boiled Oil is 2 cents per gallon advance on Raw.

Spirits Turpentine.—The Turpentine market is characterized by a firmer tone, owing to lighter stocks and export buying at the South. Local demand is confined, for the most part, to small lots. Quotations are as follows, according to quantity: Southerns, 36½ to 37 cents; machine made barrels, 37 to 37½ cents per gallon.

Old Rubber.—A fair amount of business is being done. Prices are well maintained. Dealers in New York and vicinity are paying about the following figures:

Car Springs, ton lots, per lb..... 4¾c.
Rubber Shoes, less than carloads, per lb..... 7¾c.
White Wringer Rolls, per lb..... 7¾c.
Inside Bicycle Tubing, per lb.....21 c.
Outside Tubing, per lb..... 7¼c.

CONTENTS.

	Page
Editorials—	
The Opening of Fall Trade	37
Improving the Opportunity	37
Incorporation of Labor Unions	37
Profit Sharing in England	38
Tests of Fire Proof Building Material	38
Careful Buying for Plumbers and Metal Workers	39
Suggestive Window Dressing	40
The Philadelphia Stove Trade	41
The Monarch Cinderella Heater	41
Stove Repairs	41
Chimney and Fire Place Construction	42
The Acme Gas Radiator. Illustrated	42
New Chimney Base. Illustrated	43
Beaver Stoves and Furnaces	43
Odd Plates	43
Effect of Steel Strike on Hardware Trade	44
Changes in the Lalance & Grosjean Mfg. Company's Staff	44
Timothy J. McHugh	45
A Municipal Hot Water Heating Plant	45
Pump and Well Supplies	45
Gas By Pass for Window Lighting. Illustrated	45
Fire at the Ahrens & Ott Works	46
New York City Notes	46
Heating and Plumbing Notes	46
New Firms and Changes	47
Troubles with Steam Apparatus	48
Gurney Heater Mfg. Company's Traveling Men Meet	48
Solders for Aluminum	48
The Sharon Sheet Steel Company	49
New Enameling Process	49
The Pope Tin Plate Company	49
Youngstown Iron & Steel Roofing Company	49
Sheet Metal Book Case. Illustrated	50
Flashings	51
The Steel Strike	52
The Value of Acetylene	52
New Lighting Methods in England	52
The Letter Box—	
Transition Piece from Rectangular to Round. Illustrated	53
Trouble With Drying Ovens	53
Trapped Without Consideration of Regulations	53
Quality of Window Glass	54
How Should Radiator be Connected ? Illustrated	54
Trade Report—	
Market Summary	55
Metal Market	55
The Pig Iron Market	56
Chicago Report	56
Notes on Prices	57
Metal and Miscellaneous Prices	59
Labor Exchange—	
Help and Situations Wanted	63

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED SEPTEMBER 6, 1901

The following New York quotations are for small lots:

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots.....₩ lb, 37¢
100-lb lots.....₩ lb, 35¢
Aluminum Sheet, B. & S. gauge.
In lots of 50 lbs or more.

	Wider than.....	6-in.	14-in.	24-in.
	And including.....	14-in	24-in.	30-in.
		₩ lb	₩ lb.	₩ lb.
Nos. 13 to 19.....		$0.42	$0.44	$0.47
" 20.....		.44	.46	.49
" 21 to 23		.46	.48	.51
" 24.....		.48	.50	.53
" 25.....		.47	.51	.54
" 26.....		.47	.54	.59
" 27.....		.48	.57	.62
" 28.....		.48	.57	.64
" 29.....		.49	.60	.69
" 30.....		.50	.64	.77

Note.—Lots of less than 50 lbs 5¢ ₩ lb extra.

Antimony—

Cookson.....₩ lb. 10½@11¢
Hallett's .. ..₩ lb, 8½@9¼¢
U. S.....₩ lb, 8½@9 ¢

Brass—Planished.....net

Roll and Sheet.....15@20% off

Brass and Copper Tubes

Brazed Brass Tubing—

Brown & Sharpe's Gauge the Standard.

List Feb. 26, 1896.

Plain Round Tube.	Per lb.	
¼-in. up to 2-in.....	$0.35	30@35% off.
⅝-in. up to ¾-in.....	.36	
⅞-in. up to 1-in.....	.38	
1⅛-in. up to 1⅜-in.....	.41	
5-16-in. up to ⅜-in.....	.48	
¼-in. up to 5-16-in.....	.65	
3-16-in. up to ¼-in.....	1.00	
⅛-in. up to 3-16-in.....	1.50	
Smaller than ⅛-in.....	Special	
3-in. and larger.....	Special	
2-in. to 3-in. to No. 19, inclusive.	.38	

Copper & Bronze Tubing—

3¢ ₩ lb more than Brass.

Conductors—

Corrugated. *Round or Square.*—

Galvanized ½ or more. N'st'd.....70&5%
" Not Nested.....70&2½%
" Plain Round, ⅛ or more, Nested.....70&5%
Galvanized, Plain Round, Not Nested. 70&2½%

Spiral Riveted.

Galvanized 40%
See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—See *Strainers, Conductor.*

Copper—

Lake Ingot.....17¼@17⅝¢
Casting. .....16¾@17 ¢
Sheet and Bolt.....21¢ ₩ lb basis
Cold Rolled Sheets.....22¢ ₩ lb basis
Cold Rolled and Polished Sheets..... 23¢ basis
Planished Sheets.....24¢ basis
Bottoms, Pits and Flats.....₩ lb 25¢ basis

Eaves Troughs—

List Feb. 1, 1895.

Lap or Slip Joint, Galvanized, in crates 75&10%

Eave Trough Mitres—

Lap or Slip Joint.....list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin.....30%
Galvanized.....30%
Perfect Elbows.....40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz
No. 2.	.65	.70	.75	.80	.85 "
No. 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Corrugated

Round or Square.

Galvanized 60%

Gasoline—See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16.....₩ lb	3.70...	3.75¢
Nos. 18 to 21.....₩ lb,	3.80....	3.85¢
Nos. 22 to 24.....₩ lb,	3.90....	3.95¢
Nos. 25 and 26...₩ lb,	4.00....	4.05¢
No. 27 ... .₩ lb,	4.10....	4.15¢
No. 28 .....₩ lb,	4.20....	4.25¢

Russia, Planished, &c.

Genuine Russia, according to assortment .....₩ lb 10½@11¢
Do. Stained.....6¢@10¢
Patent Planished. ₩ lb A, 11¢; B, 10¢ net

Galvanized.

Nos. 10 to 16.....₩ lb,	12¢	60% off.
Nos. 17 to 21.....₩ lb,	13¢	
Nos. 22 to 24.....₩ lb,	14¢	
Nos. 25 to 26.....₩ lb,	15¢	
No. 27.....₩ lb,	16¢	
No. 28.....₩ lb,	17¢	
No. 29.....₩ lb,	19¢	
No. 30.....₩ lb,	21¢	

36 in. 1¢ ₩ lb higher

Kerosene—See *Petroleum Products*

Lead—

American Pig..... .....4.60@4.62½¢
Bar..... .5⅛@5¼¢
Pipe.....6½¢.....20% off
Tin Lined Pipe.....12½¢.....20% off
Block Tin Pipe .....40¢.....20% off
Sheet Lead, full rolls... 7¼¢ .....20% off
Sheet Lead, cut.....7¾¢.....20% off
Old Lead in exchange, 1½¢ ₩ lb.

Miters, Eave Trough—See *Eave Trough Mitres.*

Nickel—

Per lb.....60@65¢

Paints, Oils, &c.—

Lead, White, Atlantic and Jewett's, 7¼¢
Lead. Amn. White, in oil..... 7@7¼¢
Lead, Red. bbls. and ½ bbls..... 7@7½¢
Lead, Red, kegs..... 7@7½¢
Linseed Oil:
Raw, ₩ gal..... .....51@52¢
Boiled..... .....54@55¢
Spirits Turpentine:
In bbls.....37½@38 ¢
Putty:
In barrels and ½ bbls..... .....2½
In tin cans..... .....3½¢
In bladders ....3¾¢

Palm Oil. 1500 lb casks.

Fancy Lagos.....₩ lb 6 ¢
Clarified.....₩ lb 5¾¢
Accra .....₩ lb 5½¢
Half Jack .....₩ lb 5¼¢

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline.....₩ gal. 12¼@13¢
Kerosene..... ₩ gal. 13@13½¢

Pipe, Drain..... ....40%

Pipe, Spiral—See *Conductors*

Registers—

List Sept. 2, 1901.

Black Japanned..... ....70%
White Japanned.....70%
Nickel Plated.....70%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze..... .....70%
Electroplated in Brass, Bronze or Copper..... .....70%
White Porcelain..... .....60%
Solid Brass and Bronze Metal.....50%

Roofing Material—

Heavy Single Ply Tar Felt,..... ₩ ton $30.00
2 Ply Roofing Felt.....₩ roll, 108 sq. ft. 65¢
3 Ply Roofing Felt....₩ roll, 108 sq. ft. 85¢
Roofing Pitch ₩ bbl.....$2.38

Rosin

(Barrels of 280 lb. Barrels weigh actually about 400 lb).

Common and Good—Strained.

Rosin, C. & D.....₩ bbl. $1.40 @$1.42
Rosin, E. & F.....₩ bbl. 1.55 @ 1.05
Rosin, G. & H.....₩ bbl. 1.70 @ 1.75
Rosin, I. & K .....₩ bbl. 1.80 @ 2.15
Rosin, M. & N.....₩ bbl. 2.60 @ 3.15

Seamless Brass Tubes—

Net List, February 6, 1899.

Shoes and Elbows—See *Elbows and Shoes.*

Slate Roofing—

According to size, f. o. b. cars, Quarry Station.

Pennsylvania:
Best Bangor, ₩ sqr.....$3.25@$4.50
No. 1 Bangor Ribbon, ₩ sq 3.00@ 3.50
Pen Argyle, ₩ sqr..... 3.00@ 3.75
Peach Bottom, ₩ sqr..... 4.85@ 5.60
No. 1 Boys, ₩ sqr..... 3.35@ 3.55
No 1 Chapman Keystone, ₩ sqr..... .. .. 3.25@ 4.25
Vermont:
Sea Green, ₩ sqr.....$2.00@$3.00
Purple, ₩ sqr..... 3.75@ 4.25
Unfading Green, ₩ sqr... 3.25@ 4.50
Red, ₩ sqr ..... 6.50@11.00
Maine:
Brownville, Unfading Black:
No. 1 quality..... .....$5.25@7.50
No. 2 quality..... ..$4.25@6.00

Solder—

½&½ guaranteed.....18½@19¢
No. 1..... .....15 @17 ¢
Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Concentrated Soldering Flux.
f.o.b. New York.
In barrels. ₩ lb.....4¢
Smaller quantities, ₩ lb.....5¢

Eureka Soldering Flux—Triple Strength.
In barrels, ₩ lb ..... 3 ¢
Smaller quantities. ₩ lb .....3½¢

Eureka Soldering Flux—Extra Concentrated
In barrels, ₩ lb..... .....4½¢
Smaller quantities, ₩ lb .....5 ¢

Eureka Soldering Flux—Crystal.
In 100-lb cases, ₩ lb .....7¢

Gedney's Soldering Fluid.
In carboys or barrels, ₩ lb.....2¢
$1.50 for carboy or barrel; money refunded when returned.

Lennox Soldering Fluid.
In barrels, ₩ lb.....2¢
In carboys. ₩ lb.....3¢

Perfection Soldering Flux.
No charge for package.
Bbls. about 500 lb, ₩ lb.....3¢
½ bbls., about 300 lb, ₩ lb.....3½¢
Kegs, about 110 lb, ₩ lb..... .3½¢
Kegs about 55 lb, ₩ lb..... .....4¢

Yager's Soldering Salts.
1 lb bottles, each.... .....60%
5 lb bottles, ₩ lb.....40%

Soldering Coppers—

Per lb..... ....22@24¢

Spelter—

Western Spelter.. .....4.45@4½¢

Spiral Pipe—See *Conductors.*

Stove Pipe Elbows—See *Elbows, Stove Pipe.*

Stove Trucks—See *Trucks, Stove*

Strainers, Conductor—

Galvanized..... . .....50%

Tin Pigs and Bars—

Banca, pigs, ₩ lb..... .....27¼@27½¢
Straits, pigs, ₩ lb.....27 @27¼¢
Straits, in bars, ₩ lb..... .....27¾@28 ¢

Tin Plates, American Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:

IC,	14 x 20.....	$8 25
IX,	14 x 20....	9.75
IXX,	14 x 20.....	11.00
IXXX,	14 x 20.....	12.25
IXXXX.	14 x 20.....	13.50

Melyn Grade:

IC,	14 x 20.....	7.75
IX,	14 x 20.....	9.25
IXX,	14 x 20.	10.50
IXXX,	14 x 20	11.75
IXXXX	14 x 20....	13.00

Allaway Grade:

IC,	14 x 20.....	7.25
IX,	14 x 20	8.35
IXX,	14 x 20.....	9.45
IXXX,	14 x 20..... .	10.55
IXXXX,	14 x 20.	11.65

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight } IC, 14 x 20.....$7.15@7.25
" " IX, 14 x 20.....$8.00@8.25

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 lb	15¢
95 lb	20¢
90 lb	25¢
85 lb	30¢

Terne Plates—

N. B.—The following prices are for IC, 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 lb coating and $2.50 to $3 00 advance for 15 lb and upward.

About 40 lb coating..... $18.50@19.00
About 30 lb coating..... 17.75@18.25
About 20 lb coating..... 15.75@16.25
About 15 lb coating..... 13.75@14.25
About 8 lb coating..... .....@13.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)..... $16.00
IXX, 14 x 28..(112 sheets)..... 17.00
IXX, 14 x 31..(112 sheets)..... 18.50

Troughs Eave—See *Eave Trough*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00
Steel Lock Frame, per doz..... 18.00
Daisy Improved pattern, ₩ doz... 18.00

Tubing—

Tin .....50% | Galvanized.....50%
Fittings for do.....40%

Zinc—

600 lb casks ₩ lb.....6¾¢
Per lb..... ...7½¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Fittings—

List of Oct 7, 1899

Cast Iron Fittings, Black and Galvanized, Standard sizes..60&5@60&10&5%
Cast Iron Bushings and Plugs.....65@70%
Cast Iron Flanges.....65@70%
Malleable Iron Fittings..... .50@55%
" " Bushings.....65&5@70%
" " Unions.....70@70&10%
Wrought " Nipples..... 65@70%
" " Couplings.....65@70%
" " Long Screws.....65@70%

Cast Iron Soil Pipe—

List Feb. 25, 1901.

2 to 6 inch inclusive.

Standard.....60@60&5%
Extra Heavy..... ...65@70%
All Fittings.....70@75%

Merchant Wrought Iron Pipe—

List Feb. 15, 1900

Random Lengths.

	Black.	Galv
⅛ to 1 inch.....	40%	20%
1¼ inch.....	50%	30%
1½ to 10 inch.....	55%	40%

NOTE.—*Manufacturers' prices are much lower than above, but prompt shipments are not obtainable.*

Valves, Cocks, &c.—

Iron Body Valves.....70@70&5%
Air Cocks and Radiator Air Cocks..... 70@70&5%
Soldering Unions.....70&5@75%
" Nipples .....70&5@75%
Brass Unions (Rough and Finished).. 70@70&5%
Jenkins Bros.':
Iron Body Valves, except Gate Valves 60%
All Iron Valves, except Gate Valves.. 40&5%
Iron Body Gate Valves. .... 50@50&5%
All Iron Gate Valves..... 35@40%
Iron Cocks, all Iron..... .....65@70%
" " with Brass Plugs.....60@65%
Brass Globe, Angle and Cross Valves. 65@65&10%
" " and Angle Valves, hose outlet.....65@65&10%
Brass Garden Hose Valves...65&10@70%
" Horizontal, Vertical and Angle Check Valves.....60@65%
Brass Safety Valves 55%
" " " Low Pressure....55%
Brass Radiator Valves.....65@70%
" " Jenkins 00%
Brass Jenkins' Globe, Angle, Cross and Corner Valves.....60%
Brass Jenkins' Safety and Check Valves..... 50%
Brass Jenkins' Gate Valves..... 60%
Brass Steam Cocks.....65@65&10%
" Gas Meter and Union Meter Cocks.....65@65&10%
Brass Fittings, Rough.....65@70%
" " Finished.....65@70%
" Bushings.....65@70%

Plumbers' Brass Work—

List of December 7, 1896.

Ground Key Work:
Rough Bibs and Stops.....65@70%
Finished Bibs..... .....60@65%
Rough Stop and Stop and Waste Cocks.....70@70&5%
Rough Stop and Stop and Waste Cocks, Patented.....65@65&5%
Compression Bibs.....65@65&5%
" " Flanged .....65@70%
Compression Bath Cocks and Double Bath Cocks..... .....65@70%
Compression Basin Cocks .....65@65&5%
Fuller Bibs.....70@70&10%
Fuller Basin Cocks, Nos. 1 to 4.70&10@75%
Fuller Bath Cocks, No. 4½.....$2.00 net
Chain Stays.....60&5@70%
Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face..₩ set	$0.95	$1.05
Ground Face ₩ set	$1.00	$1.10

Basin Plugs.....60@65%
Sink or Bath and Wash Tray Plugs.... 60@65%
Basin Clamps ....60@65%

Bath Tubs—

Cast Iron Enameled Bath Tubs.
List of March 26, 1900.
Regular Patterns, Guaranteed....30& 10&45%
All High Grade and Special Pattern (except as below).....25%
"Diana" and "Brighton."..... 25%
Non-Guaranteed Brands, complete line 45%
Steel Clad Copper Lined Bath Tubs, list of Feb. 1, 1899.....45@50%
Solid Porcelain Bath Tubs.....25%
Solid Copper, list of Feb. 1, 1899.....40%

Boilers—

Standard Boilers:
30 gal.....65&10@70%
35 and 40 gal.....65@05&10%
Other sizes up to 52 gal....60@60&10%
52 gal. and above..... .....60@60&5%
Extra Heavy Boilers:
18 to 52 gal ..... 50&10@60%
53 gal. and above ....50@55%

Sinks—

	Cast Iron—Black.	Galv.
Sinks, Square, Half Round and Corner..	60%	60@65%
Sink Legs. 60%		60@65%
Sink Backs.....60%		60@65%

Wrought Steel—

New Era, Galv'd and Enameled. ..70&5%
New Era, Painted.....50&10%
L. & G.....50%

Miscellaneous—

Earthenware, List of Aug. 15, 1901: Basins, Urinals and Hoppers..... 50%
Closet Bowls, Sundries, Washouts and Pedestals..... 5 %
Drawn Lead Traps, List of June 3, 1901.....50@50&5%

CLASSIFIED LIST OF ADVERTISERS.

Acetylene Gas Generators.
International Heater Co., Utica, N. Y.

Agate Nickel-Steel Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.

Aluminum Ingots.
Janney, Steinmetz & Co., Phila., Pa.

Aluminum Scrap Buyers.
Janney, Steinmetz & Co., Phila., Pa.

Aluminum Sheets.
Janney, Steinmetz & Co., Phila., Pa.

Architectural Ornaments.
Edwards Mfg. Co., Covington, Ky.
Friedley & Voshardt, Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.

Ball Cocks
Foster, F. W. Mfg. Co., Boston, Mass.

Black Plates.
American Tin Plate Co., New York.

Boilers, Range.
Koven, L. O. & Bro., 50 Cliff St., N. Y.

Brass Goods
Jenkins Bros., 71 John St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Brass Sheets, Rolls, &c.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N.Y.

CanMakers' Toolsand Machines.
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Niagara Machine & Tool Wks, Buffalo, N. Y.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.
Toledo Machine & Tool Co., Toledo, O.

Castings, Iron.
Cheney, S. & Son, Manlius, N. Y.

Ceilings, Metallic.
Berger Mfg. Co., Canton, O.
Brooklyn Metal Ceiling Co., Brooklyn, N. Y.
Canton Steel Roofing Co., Canton, O.
Dowman Mfg. Co., Atlanta, Ga.
Eller, J. H. & Co., Canton, O.
Friedley & Voshardt, Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Cellar Drainers.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Coal Vases.
Cincinnati Stamping Co., Cincinnati, Ohio.

Coils.
National Pipe Bending Co., New Haven, Conn.

Conductor Pipe and Elbows.
Berger Bros. Co., Philadelphia, Pa.
Clark, Quien & Morse, Peoria, Ill.
Lawreuce-Letts Elbow Co., Ltd., Waverly, N. Y.
McClure & Co., Pittsburgh, Pa.
Marlin & Co., Pittsburgh, Pa.

Copper, Roofing and Cornice.
Gummey, McFarland & Co., Phila., Pa.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N.Y.

Cornice Machinery.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Dreis, Andrews & Krump, Chicago, Ill.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.

Cornice Work, Galvanized Iron.
Garry Iron & Steel Co., Cleveland, O.
Marlin & Co., Pittsburgh, Pa.

Couplings. (*See Pipe Couplers.*)

Cresting.
Watson, Jas. H. Est., Crawfordsville, Ind.

Cut Offs, Rain Water.
Cooney & Geiger, Indianapolis, Ind.

Damper Clips.
Brobard Co., Phila., Pa.

Dampers.
Greene, W. F., Est. of, Troy, N. Y.
Howes, S. M. Co., Boston, Mass.
Troy Nickel Works, Troy, N. Y.

Dash Lamps.
Dietz, R. E. Co., New York.

Die Stocks.
Curtis & Curtis Co., Bridgeport, Ct.

Drop Hammers.
Bliss, E. W. Co., Brooklyn, N. Y.
Toledo Mach. & Tool Co., Toledo, O.

Dumb Waiters.
Energy Elevator Co., Phila., Pa.

Eave Troughs.
Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Co., Canton, O.
Clark, Quien & Morse, Peoria, Ill.
Eller, J. H. & Co., Canton, O.
Marlin & Co., Pittsburgh, Pa.
Watson, Jas. H. Est., Crawfordsville, Ind.

Eave Trough Hangers.
Berger Bros. Co., Phila., Pa.
Berger Mfg. Co., Canton, O.
Watson, Jas. H. Est., Crawfordsville, Ind

Eave Trough Machines.
Marlin & Co., Pittsburgh, Pa.

Elbows, Stove Pipe.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
Reeves Mfg. Co., Canal Dover, O.

Enameled Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., New York.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Faucets.
Clark Novelty Co., Rochester, N. Y.
Litchfield, J. M., 105 Beekman St., N Y

Fire Brick.
Donaldson, O. G. & D. H., Buffalo, N.Y.
Newton, W. M., Albany, N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.

Fire Pots.
Burgess Soldering Furnace Co., Columbus, Ohio.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Fire Sets.
Troy Nickel Works, Troy, N Y.

Flue Stoppers.
Stuber & Kuck, Peoria, Ill.

Furnace Cement.
Colebrook, W. H. Sons & Co., Syracuse, N. Y.
Perkins, J. L. & Co. Chicago.

Furnace Pipe and Fittings.
International Heater Co., Utica, N. Y.
Meyer, F. & Bro. Co., Peoria, Ill.
Osoorn, J. M. & L. A., Cleveland, O.
Safety Furnace Pipe Co., Detroit, Mich.
Schaffer, Jno. P., Pittsburgh Pa.

Furnaces and Heaters.
Amer. Furnace Co., St. Louis Mo.
Barstow Stove Co., Providence, R.I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co, Neenah, Wis.
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwankee, Wis.
Brien Heater Co., Hoosick Falls, N. Y.
Buckwalter Stove Co., Royersford, Pa
Dean Boiler Co, Boston, Mass.
Dignton Furnace Co., Taunton, Mass.
Floyd, Wells & Co., Royersford, Pa.
Forest City Fdry. & Mfg. Co., Cleveland, Ohio.
Graff Furnace Co., 208 Water Street, New York.
Hart & Crouse Co., Utica, N. Y.
Howes, S. M. Co., Boston, Mass.
International Heater Co., Utica, N. Y.
Keeley Stove Co., Columbia, Pa.
Kelsey Furnace Co., Syracuse, N. Y.
Lennox Machine Co., Marshalltown, Iowa.
Magee Furnace Co., Boston, Mass.
Meyer, F. & Bro. Co., Peoria, Ill.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
Noyes & Nutter Mfg. Co., Bangor, Maine.
Richmond Stove Co., Norwich, Conn.
Schaffer, John P., Pittsburgh, Pa.
Schwab, R. J. & Sons Co., Milwaukee, Wis.
Sheppard, Isaac A. & Co., Phila., Pa.
Stamford Fonndry Co., Stamford, Ct.
Stenton Heater Co., Martins Ferry, O.
Tubular Heating and Ventilating Co., Phila., Pa.
Utica Heater Co., Utica, N. Y.
Wood & Bishop Co., Bangor, Me.

Gas Heaters. (*See Stoves and Ranges, Gas.*)

Gas Machines.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Granite Steel Ware.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Groovers.
Wheeler, W. A., Indianapolis, Ind.

Hack Saws.
Millers Falls Co., 28 Warren St., N. Y.

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American Radiator Co., Chicago, Ill.
Barstow Stove Co., Providence, R.I.
Boynton Furnace Co., 207 Water St., N. Y.
Dean Boiler Co., Boston, Mass.
Dighton Furnace Co., Taunton, Mass.
Drake, W. H., Newark, N. J.
Gorton & Lidgerwood Co., 98 Liberty St., New York.
Gurney & Co., Boston, Mass.
Gurney Heater Mfg. Co., Boston, Mass.
Hart & Crouse Co., Utica, N. Y.
International Heater Co., Utica, N Y.
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Magee Furnace Co., Boston, Mass.
National Pipe Bending Co., New Haven, Conn.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
Richmond Stove Co, Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith, H. B. Co., Westfield, Mass.
Smith & Anthony Co., Boston, Mass.
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Stolz, Frank D., Chicago, Ill.
Utica Heater Co., Utica, N. Y.
Vance Boiler Works Geneva N. Y.

Hip Shingles.
Galesburg Cornice Works, Galesburg Ill.

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Amer. Sheet Steel Co., New York.

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Littleford Bros., Cincinnati, O.

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Washburns, E G. & Co., 46 Cortlandt St., N. Y

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Excelsior Tool & Mch. Works, St. Louis, Mo.
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SEE ALPHABETICAL INDEX, PAGE 62.

Miner & Peck Mfg. Co., New Haven, Conn.
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Ohl, Geo. A. & Co., Newark, N. J.
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Sanhorn, J., 217 Water St., N. Y.
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Bridgeport Crucible Co., Bridgeport, Conn.
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Detroit Stove Works, Detroit, Mich.
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Ringen Stove Co., St. Louis, Mo.
Standard Lighting Co., Cleveland, O.

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Clark, Henry N. Co., Boston Mass.
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Smith-Warren Co., Boston, Mass.

Wiping Cloths.
Allhe Chas. A., Springfield, Mass.

SEE ALPHABETICAL INDEX, PAGE 62.

THE METAL WORKER.

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Rates for larger spaces quoted on application.

DAVID WILLIAMS COMPANY, Publishers.

232, 234, 236 and 238 William Street, NEW YORK. 805 Fisher Building, CHICAGO.

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Remittances should be made by draft, payable to the order of DAVID WILLIAMS COMPANY, on any banking house in the United States or Europe, or by P. O. Money Order on New York. When these cannot be obtained, postage stamps of any country will be received

Newsdealers or Booksellers in any part of the world may obtain *The Metal Worker* through The American News Company, New York, U. S. A.; The International News Company, New York, U. S. A., and London, England; or The San Francisco News Company, San Francisco, Cal., U. S. A.

Entered at the Post Office, New York, as Second-class Matter.

ALPHABETICAL LIST OF ADVERTISERS.

Adam, W. J. 34
Adler, H. Co. 12
Allhe. Chas. A. 33
American Furnace Co. 12
American Hardware Mfg. Co. 77
American Radia'or Co. 16
American Sheet Steel Co. ...1&72
American Tin Plate Co. 72
Asphalt Ready Roofing Co .. 73
Atlas Radiator Pedestal Co... 28
Auld & Conger. 68
Ayling Bros. 80
Barstow Stove Co. 80
Beckwith, P. D., Est. of. 2
Berger Bros. Co. .....32&69
Berger, L. D. 76
Berger Mfg. Co 74
Bergstrom Bros. & Co. 20
Bertsch & Co. 78
Bliss, E. W. Co. 78
Blodgett, G. S. Co. 24
Boss Washing Machine Co.... 65
Boynton Furnace Co. 6
Brand Stove Co. 21
Bray, J. & Co. 68
Bridgeport Crucible Co. 29
Brien Heater Co. 23
Brohard Co. 32
Brooklyn Metal Ceiling Co.... 70
Bruce & Cook. .....73&80
Brucker, M. 80
Buckwalter Stove Co. 8
Burgess Soldering Furnace Co. 34
Burton, W. J. & Co. 75
Callahan, Geo. & Co. 69
Canton Steel Roofing Co. 75
Castle, Wilmot & Co. 26
Cheney, S. & Son 1
Cincinnati Stamping Co. ...23&76
City Forge & Iron Works..... 30
Clad, V. & Sons, Inc. 24
Clark, Henry N. Co. 32
Clark Novelty Co. 66
Clark, Quien & Morse. 71
Clason Arch. Metal Works... 68
Clayton & Lambert Mfg. Co.. 35
Clough, R. M. 78
Colebrook, W. H. Sons & Co. 28
Colwell Lead Co. 33
Connors, Wm. Paint Mfg. Co. 66
Cooney & Geiger. 69
Cope, Geo. W 25
Cortright Metal Roofing Co... 75
Crosby Steam Gage & Valve Co. 1
Crown Ventilator Co. 69
Curtis & Curtis Co. 34
Dangler Stove & Mfg. Co. 24
Dean Boiler Co. 24
Detroit Stove Works. 13
Dietz, R. E. Co. 65
Dighton Furnace Co. .....1&18
Dixon, Jos. Crucible Co. 31
Donaldson, O. G. & D. H. 80
Double Truss Cornice Brake Co 76
Dowman Mfg. Co. 69
Drake, W. H. 22
Dreis, Andrews & Krump. 76
Drouve, G. Co. 75
Edwards, J. H. 35
Eclipse Stove Co. 25
Edwards Mfg. Co. 75
Eller, J. H. & Co. 75
Energy Elevator Co. 33
Enterprise Stove Co. 12
Esterbrook's, R. Sons. 33
Excelsior Stove Mfg. Co. 13
Excelsior Tool & Mch. Wks.. 79
Fanner Mfg. Co. 32
Feun, Geo. E. 69
Floyd, Wells & Co. 21
Follansbee Bros. Co. 1
Forest City F'dry & Mfg. Co.. 22
Foster, F. W. Mfg Co. 35
Fricdley & Voshardt. 74
Frink, I. P. 80
Fuller & Warren Co. 1
Galeshurg Cornice Works.... 67
Galt, John & Sons. 68
Garry Steel & Iron Co. 73
Garvin Machine Co 76
Genuine Bangor Slate Co. 68
Gerock Bros. Mfg. Co. 69
Globe Ventilator Co. 69
Gobeille Pattern Co. 32
Gordon, W. J. 79
Gorton & Lidgerwood Co. 1
Graff Furnace Co. 16
Greene, W. F., Est. of. 28
Gummey, McFarland & Co... 71
Gunster & Forsyth. 35
Gurney & Co. 19
Gurney Heater Mfg. Co. 21
Hamlin, G. R. 68
Harrington & King Perforating Co. 62
Hart & Crouse Co. 20
Hessler, H. E. Co. 29
Hoffman, Geo. W. 80
Howes, S. M. Co. .....14, 30&32
Howson & Howson 65
Hungerford, U. T., Brass & Copper Co. 79
Independent Register Co. 25
International Correspondence Schools. 64
International Heater Co. 9
Janney, Steinmetz & Co. 68
Jenkins Bros. 1
Johnson, E. J. & Co. 68
Joliet Stove Works. 10
Keeley Stove Co. 12
Keene, Geo. C. & Co 79
Kelsey Furnace Co. 96
Kemp, C. M. Mfg. Co. 35
Kewanee Boiler Co. 18
Kieley & Mueller. 1
Koven, L. O. & Bro. 33
Lalance & Grosjean Mfg. Co.. 66
Lamb & Ritchie. 35
Lawrence-Letts Elbow Co.... 28
Lennox Machine Co. 25
Litchfield, J. M. 66
Littleford Bros. 67
Livermore, H. F. 34
M & D Range Co. 6
McClure & Co. 80
McLeod & Henry Co. 1
McSherry, Chas. 77
Magee Furnace Co 1
Magoon, A. J. & Son 31
Marcy Stove Repair Co. 29
Marlin & Co. 74
Marston, I. G. & Co. 33
Meurer Bros. Co. 71
Meyer, F. & Bro. Co 21
Michigan Stove Co. .....4&5
Millar, Chas. & Son Co. 80
Millers Falls Co. 79
Miner & Peck Mfg. Co 31
Montross Metal Shingle Co.... 78
Morgan & Co. 33
Mueller, L. J. F'ce Co. 15
Munsell, E. & Co. 33
National Enameling & Stamping Co. 36
National Pipe Bending Co.... 22
New Haven Novelty Machine Co. 35
Newton, Wm. M. 1
New York Iron Roofing & Corrugating Co. 71
New York Trade School. 64
Niagara Machine & Tool Wks. 77
Noyes & Nutter Mfg. Co. 22
O'Halloron & Jacobs. 68
Ohio Mica Co. 33
Ohl, Geo. A. & Co. 78
Osborn, J. M. & L. A 73
Ostrander, W. R. & Co. 65
Palermo Mica Co. 33
Peck, Stow & Wilcox Co. 77
Perkins, J. L. & Co. 29
Phila. Machine Tool Co. 77
Pierce, Butler & Pierce Mfg. Co. 28
Pittsburgh Stove & Range Co.11
Portsmouth Stove & Range Co. 8
Presbrey Stove Lining Co. 29
Quincy Fdry & Novelty Co... 13
Rasner & Dinger. 76
Reeves Mfg. Co. 70
Resor, Wm. & Co. 11
Rhodes, L. E. Co. 35
Richmond Stove Co. 19
Ringen Stove Co. 7
Robinson, J. M. & Co. 79
Rochester Radiator Co. 26
Rutland Fire Clay Co. 28
Sackman, F. A. 64
Safety Furnace Pipe Co. 26
Salem Nail Co. 69
Sanborn, John. 73
Saunders', D. Sons. 34
Schaffer, John P. 19
Schratwiesers Metal Lath Works. 73
Schwab, R. J. & Sons Co. 18
Schwerdtle Stamp Co. 68
Seavey Mfg. Co. 28
Shepard, Sidney & Co. 25
Sheppard, Isaac A. & Co. 1
Silver & Co. 65
Smith, H. B. Co. 17
Smith & Anthony Co. 80
Smith & Thayer Co 26
Smith-Warren Co. 70
Special Notices. 64
Sperry, D. R. & Co. 61
Stamford Foundry Co 28
Standard Lighting Co. 9
Stanton Heater Co. 20
Stiles & Parker Press Co. 78
Stocking, E. B. 64
Stolz, Frank D. 22
Stuber & Kuck. 25
Swaine, F. J. Co. 78
Syracuse Stove Works. 27
Taylor Co., N. & G. 80
Tinnerman Steel Range Co... 25
Toledo Mch. & Tool Co. 76
Townley, H. P. 64
Trimont Mfg. Co. 33
Troy Nickel Works. 29
Tubular Heating & Ventilating Co. 14
Tucker & Dorsey Mfg. Co.... 32
Union Stove Repair Co. 31
Utica Heater Co. 19
Valentine, M. D. & Bro. Co... 29
Vance Boiler Works. 22
Vanderman Plumbing & Heating Co. 33
Vedder Pattern Works. 25
Vogel, William & Bros 67
Vulcan Metal Refining Co.... 64
Vulcan Western Co. 64
Walker & Pratt Mfg. Co. 9
Washburne, E. G. & Co. .....69&76
Watson, Jas. H. Est. 70
Wayne, Anthony Mfg Co.... 65
Weir Stove Co. 80
Weiss, H. & Co. 76
Wheeler, W. A. 77
Wister, L. & R. & Co 80
Wood & Bishop Co. 23
Wood, Alan Co. 73
Young, Jos. H. 33
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Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

An up to date man on PATTERN MAKING for cast soil pipe; a man who can take charge of the casting work. "Mac." care *The Metal Worker,* Hamilton Building, Pittsburgh, Pa. Sept. 7

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SLATE ROOFERS wanted at once; state wages required; steady work for sober men. A. C. Hathorne, Burlington, Vt. Sept. 7

At once, first-class FOUNDRYMAN to take charge of steam and hot water furnaces and ranges. "Hot Water," care *The Metal Worker,* New York. Sept. 7

Wanted at once, one good PLUMBER; one that has some knowledge of steam fitting preferred. Chas. Thomas, Kennett Square, Pa. Sept. 7

Wanted, a TINSMITH and JOBBER for country shop with some knowledge of steam heating and plumbing; must be sober and honest and willing to look after store at times; give references and wages wanted. Wm. C. Cook, Branchville, N. J. Sept. 7

A young man who has worked in a hardware store and tinshop and would like to finish his trade; steady position and board with employer to right man. Box 70, Worcester, N. Y. Sept. 7

First-class TINNER; must be quick on wash boilers, good on jobbing, hotel and bakers' supplies. J. Melncove, 1311 Seventh street, N. W., Washington, D. C. Aug. 31

TINNER who understands hot air furnace work and general jobbing; must understand measuring plans for roofing; a steady job to the right man; must be sober. Wm. E. Hough, Morgantown, W. Va. Aug. 31

Wanted, three high-grade STOVE SALESMEN for 1902 to represent first-class stove house in Illinois, Iowa and Minnesota; none but good salesmen need apply. Box 133, care *The Metal Worker,* 1205 Fisher Building, Chicago, Ill. Aug. 31

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First-class SHEET IRON WORKER to measure and put up indirect steam work, &c.; good steady job to right man. "J. L. R.," care *The Metal Worker,* New York. Aug. 31

A good TINSMITH and an all-around man for a hardware store; must be honest and temperate. Frank Enderlin, Roxbury, N. Y. Aug. 31

A man who thoroughly understands ROOFING, HEATERS and JOBBING; must be sober; steady job. Wm. E. Williams, 105 West Tenth street, Wilmington, Del. Aug. 31

MOUNTING SHOP FOREMAN; have a good position for thoroughly competent man. Thos. Hamilton, Supt. Joliet Stove Works, Joliet, Ill. Aug. 31

TINNER, steady work; state wages. Box 414, Lakewood, N. J. Aug. 31

Wanted, a high grade TRAVELING SALESMAN to sell furnaces as a side line on commission. The Forest City Foundry & Mfg. Company, Cleveland, Ohio. Aug. 31

First-class METAL CEILING ERECTORS wanted immediately; steady work to right parties; only skilled mechanics need apply. The Penn Metal Ceiling & Roofing Company, Ltd., 14 Harcourt street, Boston, Mass. Aug. 31

First-class STOVE SALESMAN for Western New York and Western Pennsylvania; state age, experience and salary. The Art Stove Company, Detroit, Mich. Aug. 31

Two or three CORNICE MAKERS for in and outside work; must be hustlers; good wages; apply at once, ready for work. Newburgh Cornice Works, Newburgh, N. Y. Aug. 31

A galvanized iron CORNICE WORKER; one who can lay out his own work. Brice Bros., 78-80 W. Chestnut street, Washington, Pa. Aug. 24

Five experienced CORNICE and SKYLIGHT MAKERS and five TIN ROOFERS; write, stating wages. James Ackroyd, 10 and 12 James street, Albany, N. Y. Aug. 24

SITUATIONS WANTED.

A steady position with a reliable house heating firm as STEAM and HOT WATER FITTER; am strictly temperate and reliable; have been 15 years at the business; please state full particulars. F. P. Corser, 466 Pleasant street, Worcester, Mass. Sept. 7

A young, successful FACTORY MANAGER, familiar with designing and construction of gas stoves and appliances, who has also had entire charge of factory, buying and selling, desires a change of position; is at present employed as manager of one of the best gas stove firms in the country; can give best of references and leave present position on 30 days' notice; able to design and construct any style of gas stove or range desired. Address "Stove Manager," care *The Metal Worker,* New York. Sept. 7

As PLUMBER and GAS FITTER; wages moderate. Patrick Marron, New Paltz, Ulster County, N. Y. Sept. 7

TINSMITH wishes steady position; understands roofing, furnace work and plumbing, range work and general jobbing. B. F. Darling, Port Jefferson, N. Y. Sept. 7

A strictly sober and reliable mechanic, qualified to do FURNACE WORK, TINNING, PLUMBING, STEAM or HOT WATER HEATING; have done some bell work and local telephones; can estimate and lay out work; have had charge of a shop and store and understand general business methods; could furnish a good set of tools for any of the above branches; could begin at once. "Competent," Box 33, East Stroudsburg, Pa. Sept. 7

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By an experienced STOVE SALESMAN, a position with good firm; New England territory preferred; a temperate young man and a hustler: let me hear from you. "Business," care *The Metal Worker,* New York. Sept. 7

By a first-class PLUMBER, TINNER and GAS FITTER, with some knowledge of steam and hot water work; steady position; strictly temperate and reliable. "Steady," care *The Metal Worker,* New York. Sept. 7

PLUMBER, strictly first-class, desires steady work in city or country, South preferred; 24 years' experience; understand plans; take charge or work journey work and study employer's interest; honest, sober and reliable and can furnish best reference. Wm. Murphy, 475 East 115th street, New York. Sept. 7

Steam and hot water fitter of experience wishes a steady position as MANAGER of a first-class heating construction firm; understand plans and specifications; can estimate, close contracts, lay out the plant and take full control of construction; competent upon the different systems; references. "Ed," care *The Metal Worker,* New York. Sept. 7

PLUMBER, GAS, STEAM and HOT WATER FITTER wants a steady position in charge; able to estimate, manage mechanics, lay out the work; thoroughly competent on sanitary work, the general construction of heating or power work; experienced; understand plans and specifications; references. "Joe," care *The Metal Worker,* New York. Sept. 7

A first-class STEAM and HOT WATER FITTER; can do all kinds of general jobbing; 12 years' experience; good reference. "H.," care *The Metal Worker,* New York. Sept. 7

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By a PLUMBER with 20 years' experience, steady position anywhere, in the South preferred. "R. B.," care *The Metal Worker,* New York. Sept. 7

By a first-class PLUMBER and GAS FITTER; strictly temperate; married; a hustler; 14 years' experience; city or country. Geo. R. Freeman, General Delivery, Watertown, N. Y. Sept. 7

A first-class SALESMAN, acquainted with stove, house furnishings and general jobbing shop; has been salesman in leading stove house in Water street, New York, for the past 18 years. "D. D. W.," care *The Metal Worker,* New York. Sept. 7

By a first-class PLUMBER in country or city. Thomas McSpedon, 328 East Sixtieth street, New York. Sept. 7

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PLUMBER, TINSMITH, STEAM and HOT WATER FITTER desires steady position, city or country; 12 years' experience; am strictly temperate and honest and can furnish best of references. "Plumber," Box 185, Billerica, Mass. Sept. 7

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PLUMBER desires work out of town. F. Schaefer, 307 East Eighty-fifth street, New York. Aug. 31

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A first-class SALESMAN, acquainted with the building and contracting trade of New York and vicinity. "A. L. C.," care *The Metal Worker,* New York. Aug. 31

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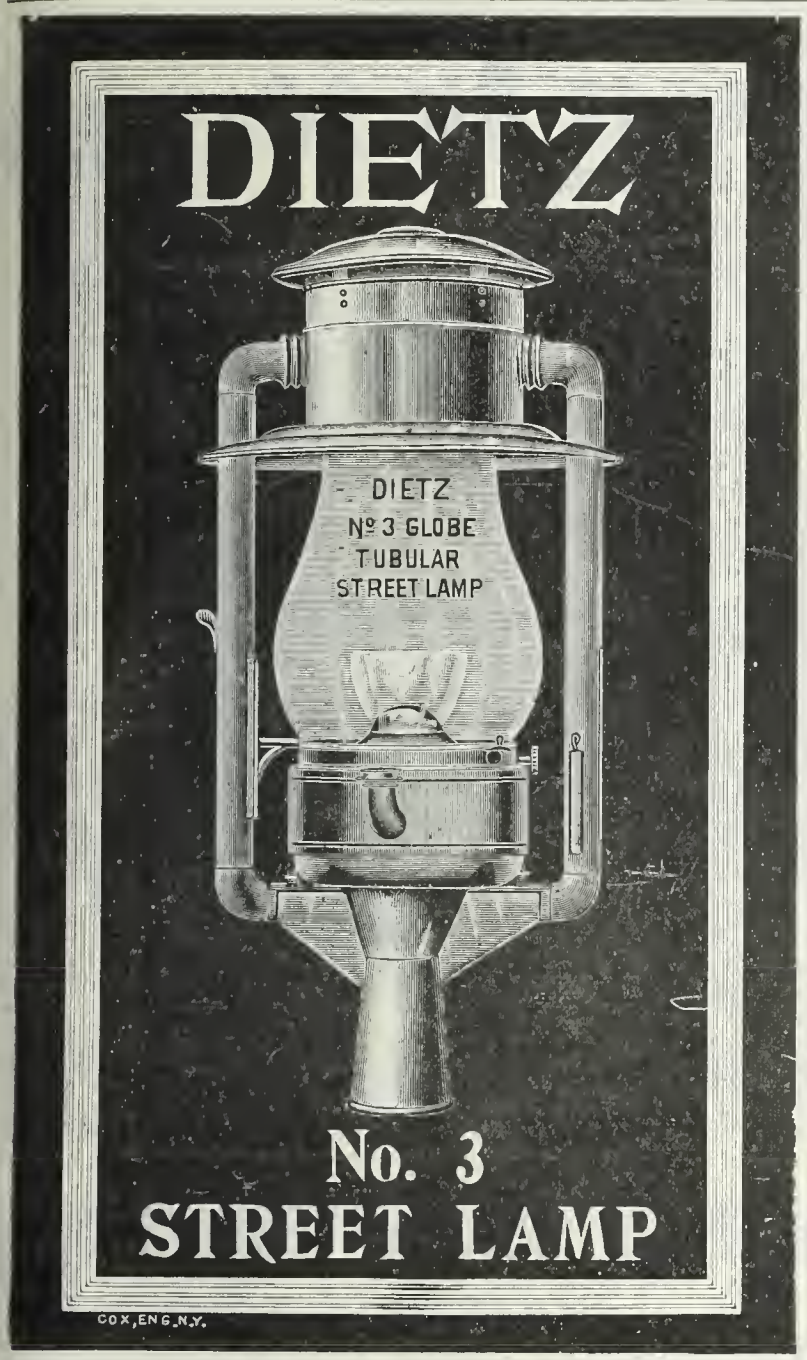

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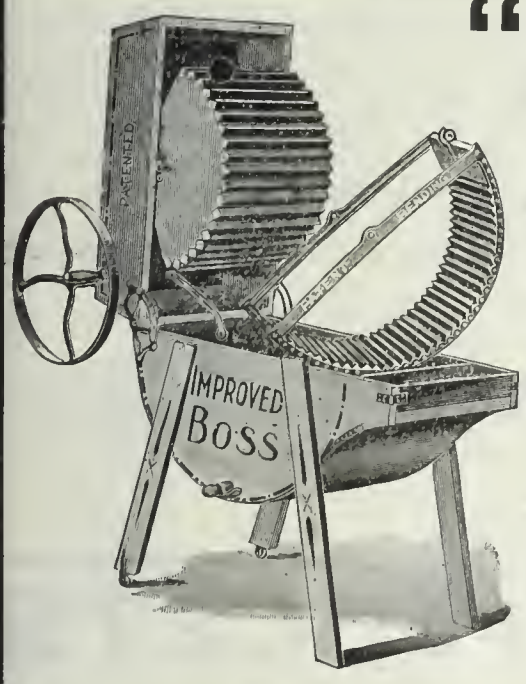

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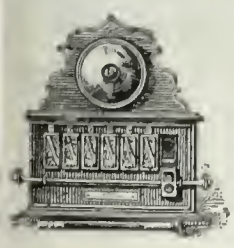

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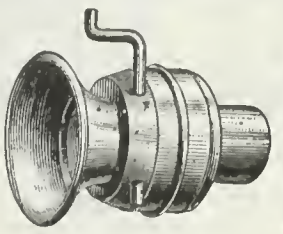

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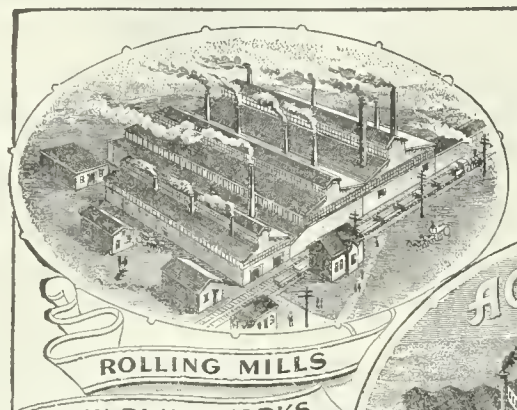

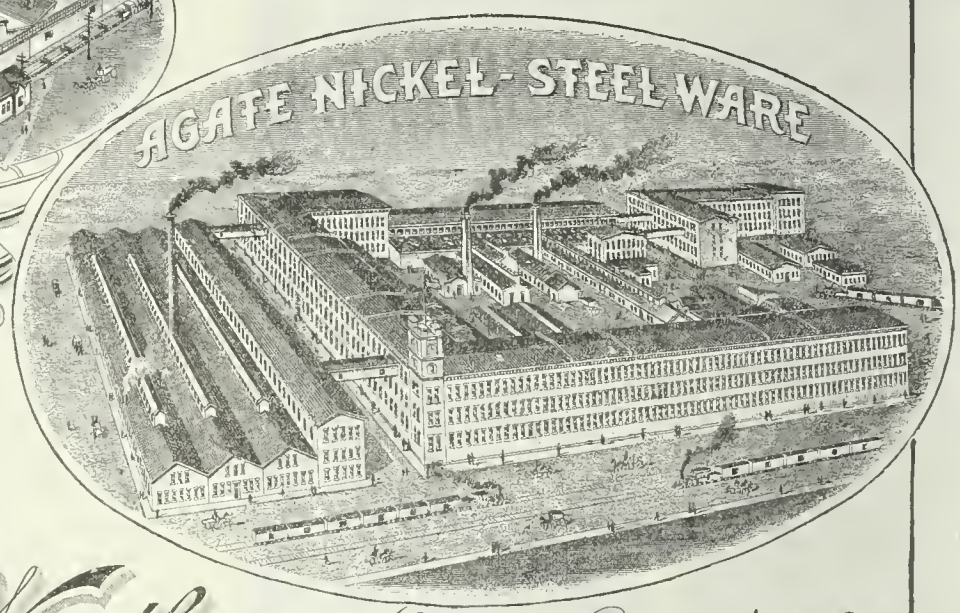

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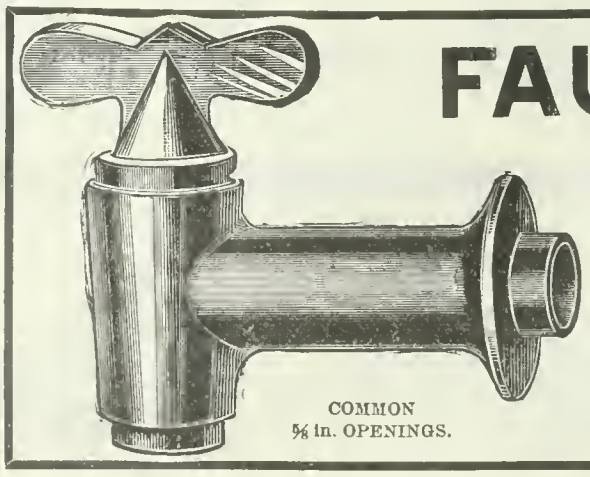

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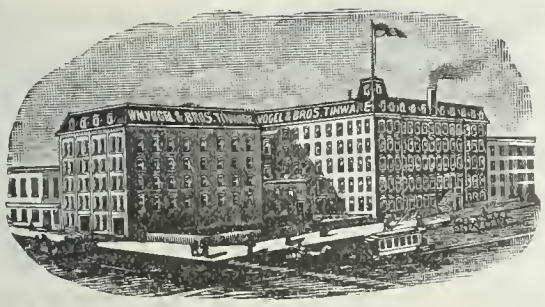

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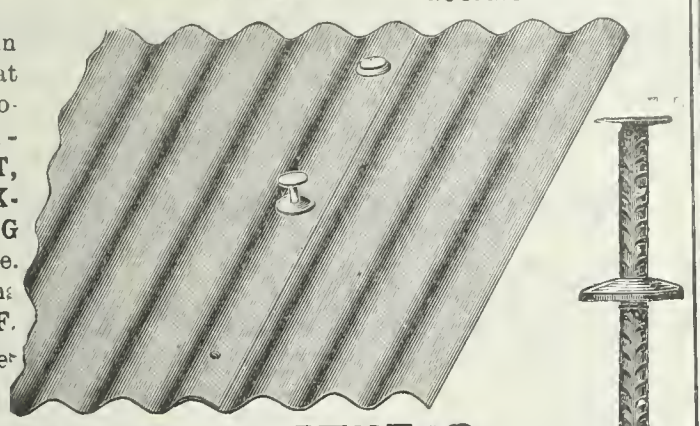

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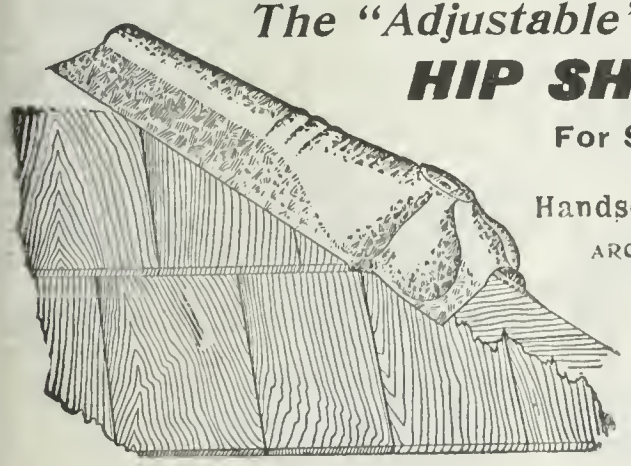

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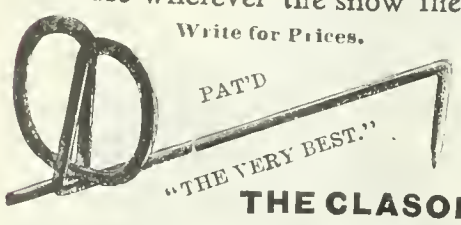

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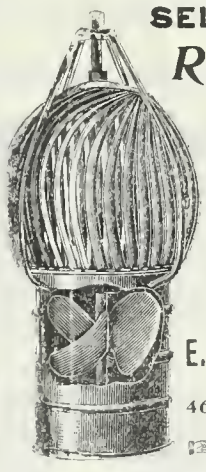

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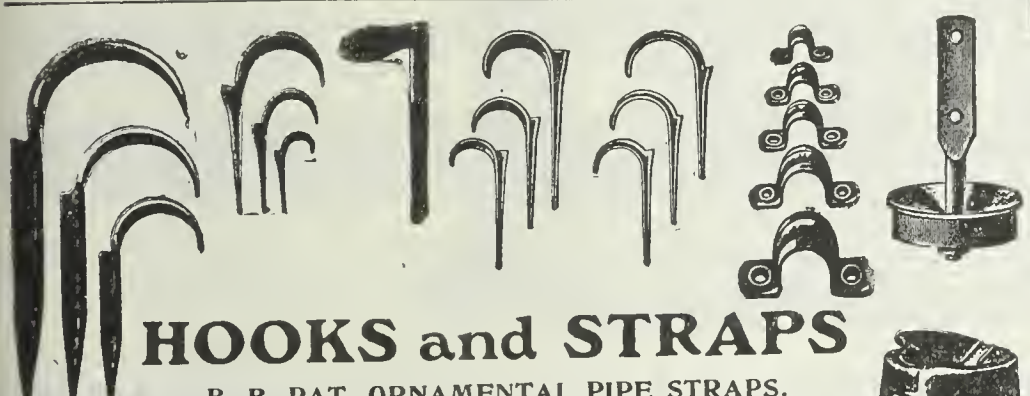

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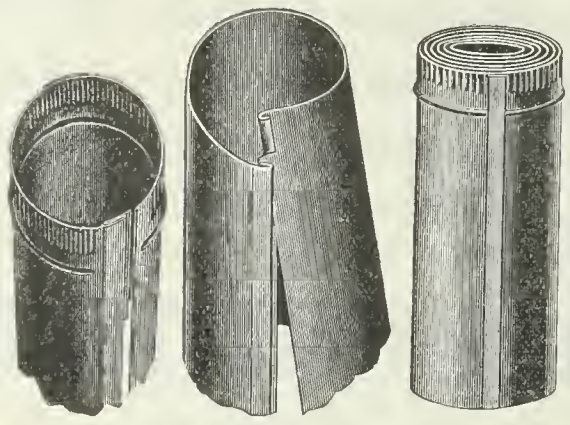

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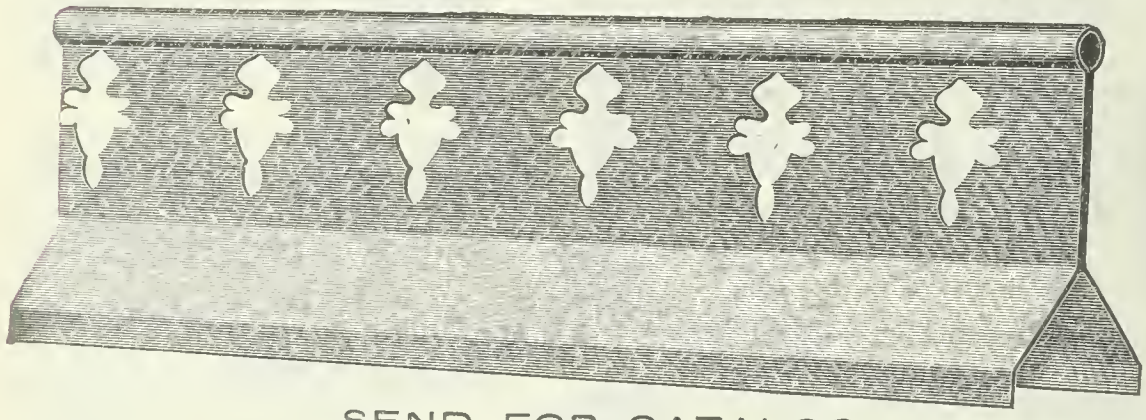

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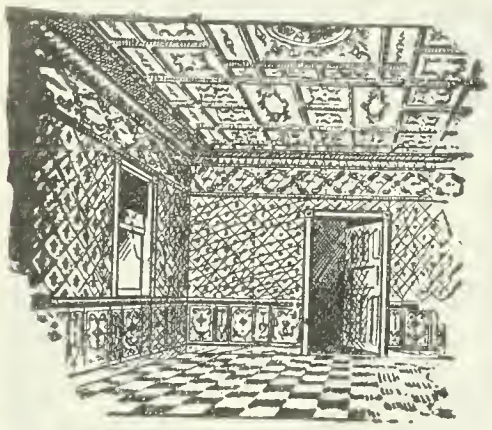

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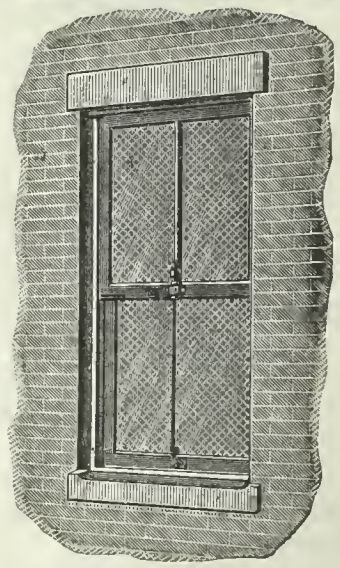

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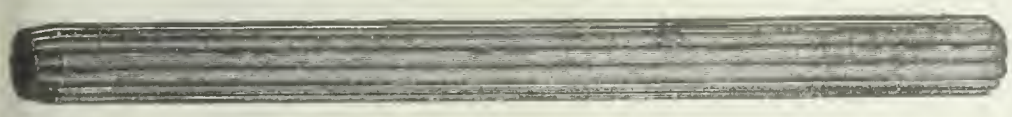

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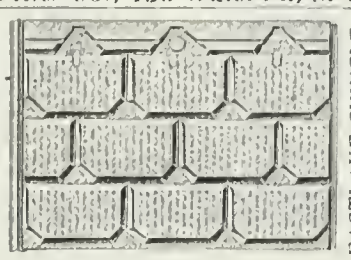

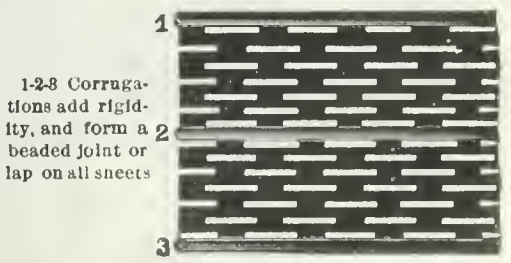

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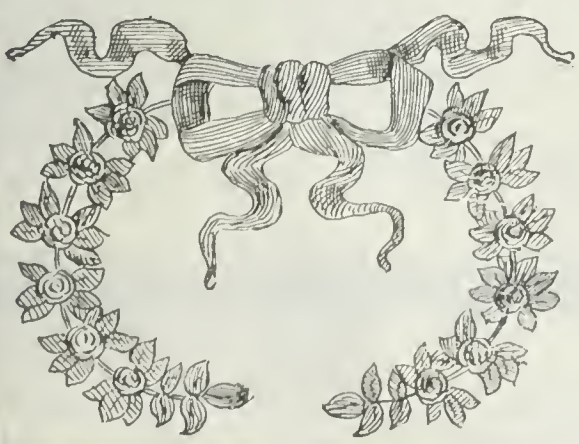

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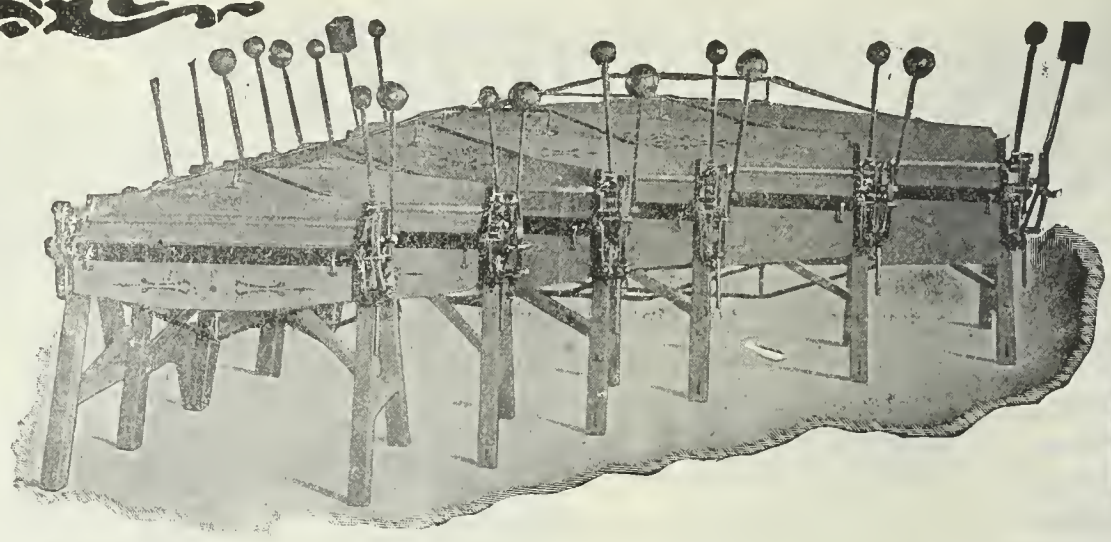

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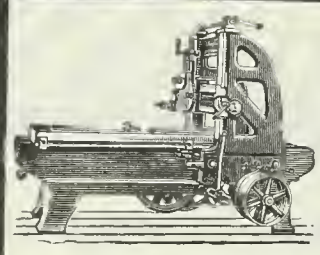

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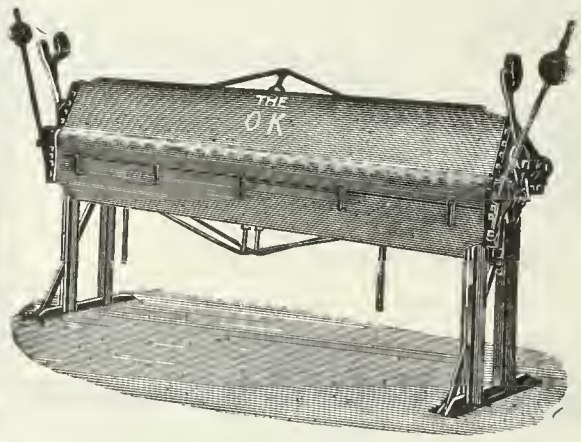

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Formers on cornice brakes included.

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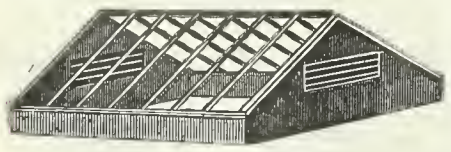

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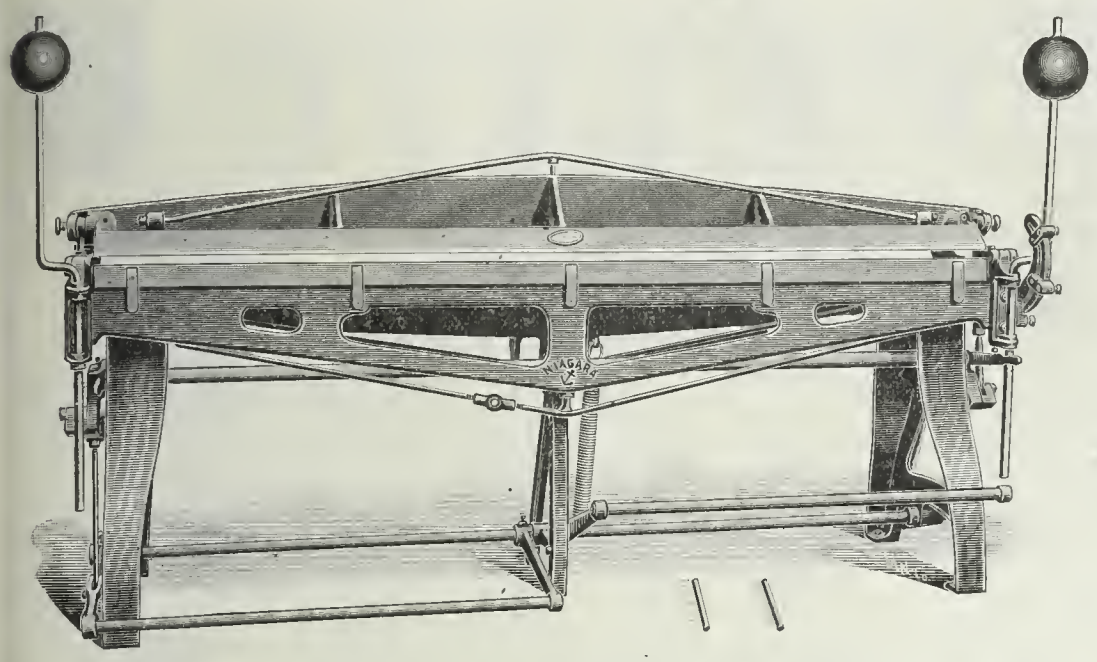

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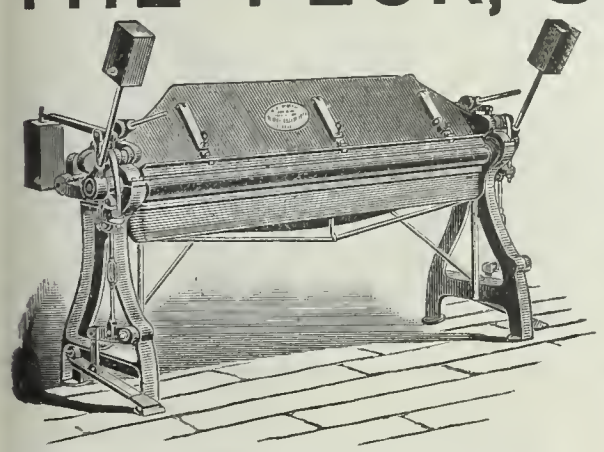

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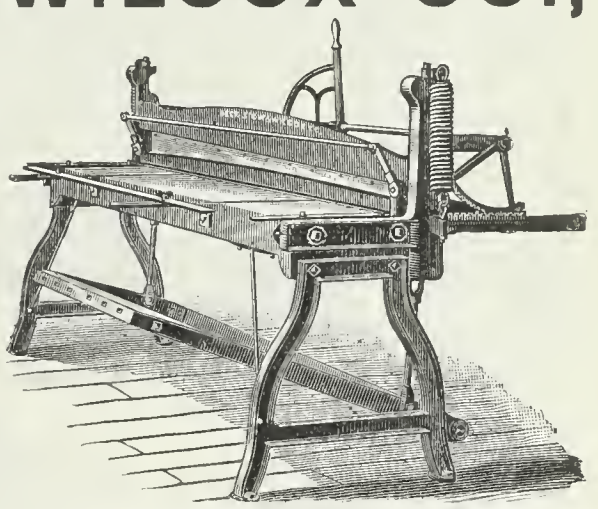

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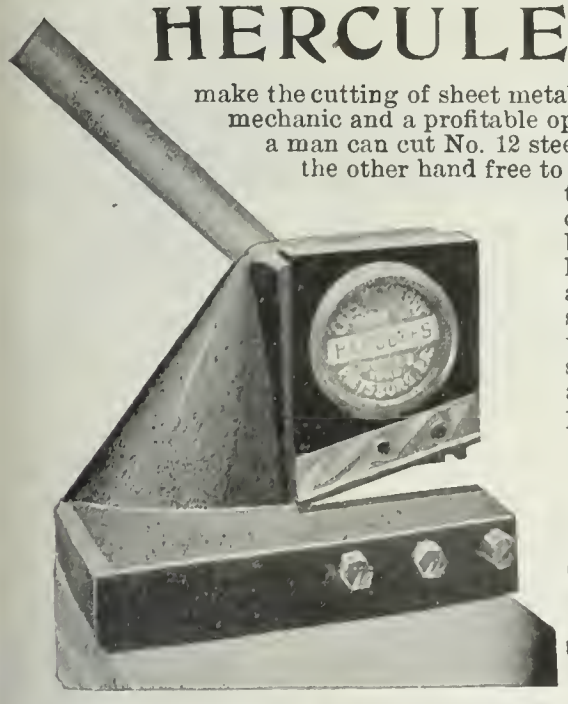

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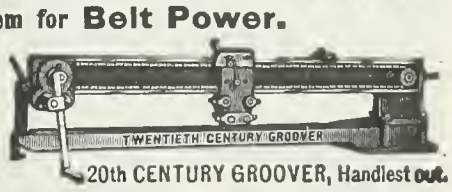

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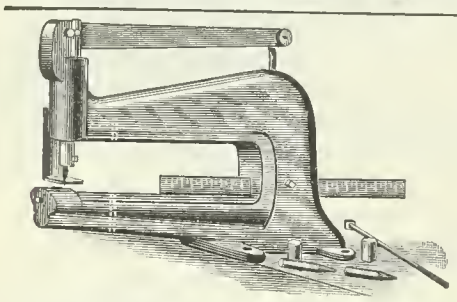

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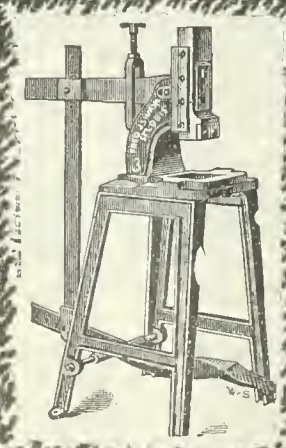

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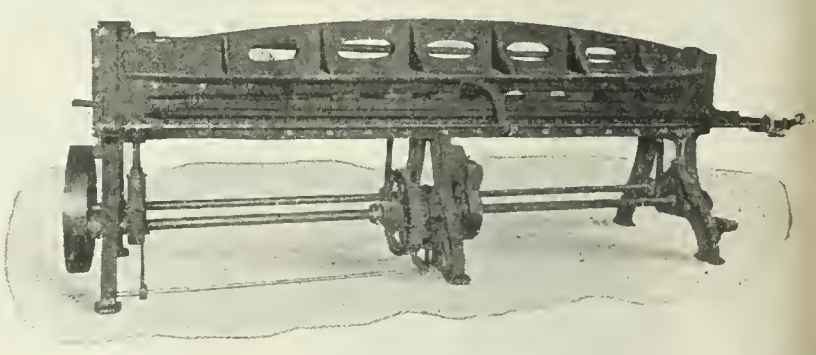

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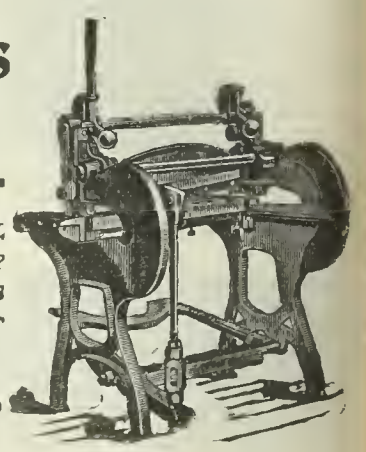

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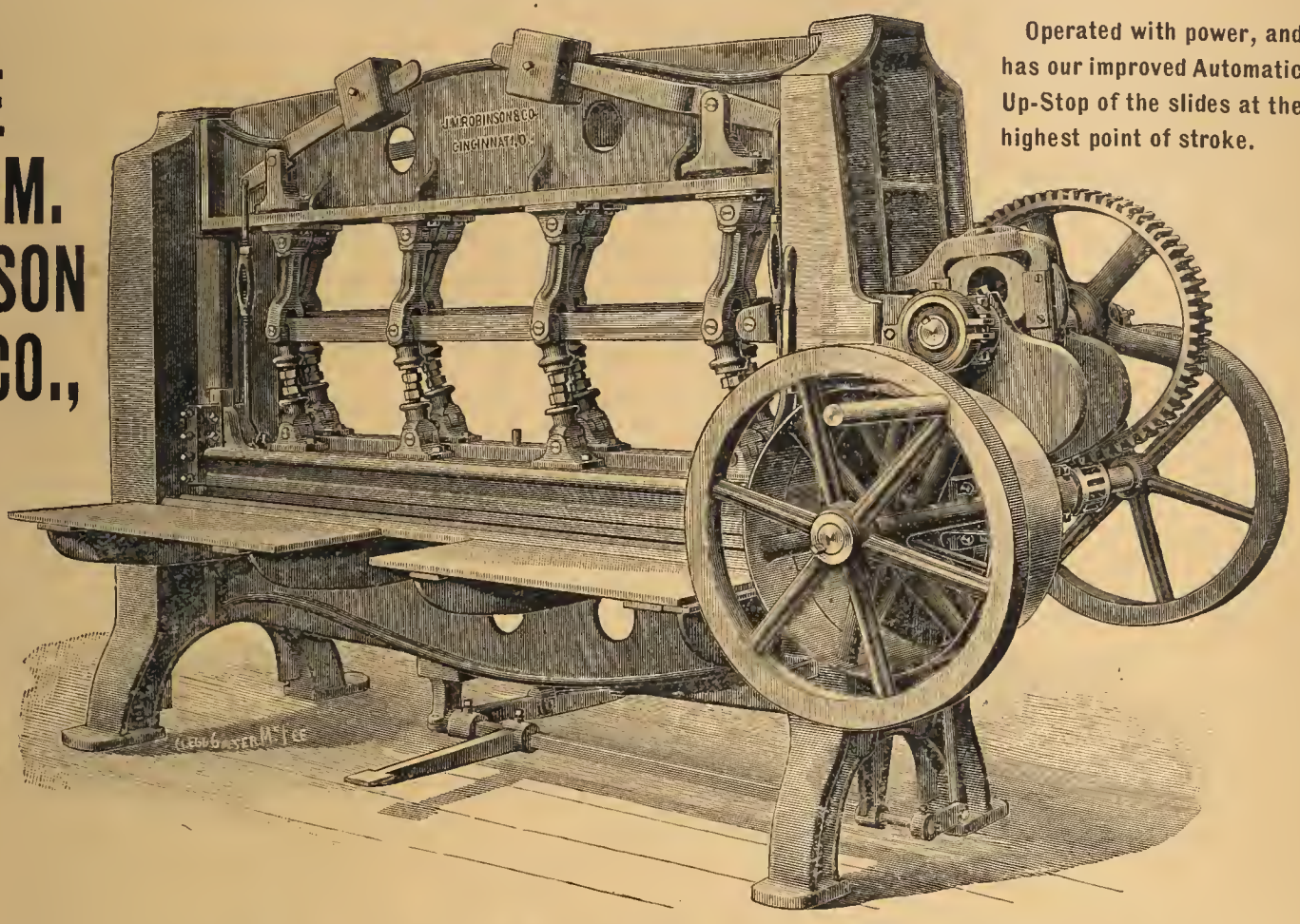

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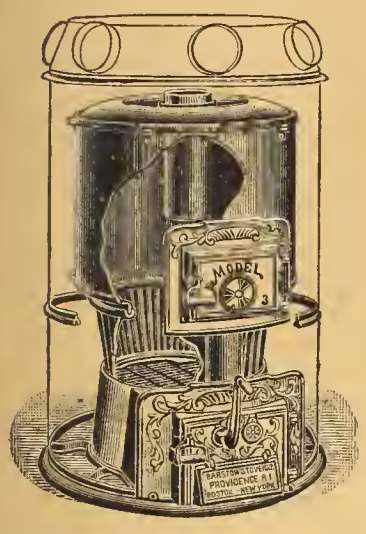

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Index to Reading Matter, Page 67.

Index to Advertisements, Pages 69 71

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A WEEKLY JOURNAL OF THE ROOFING, CORNICE, STOVE, TIN, PLUMBING AND HEATING TRADES.

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That's the point that makes the Paragon differ so widely from the common hot air furnace. By means of an upper radiator, the inner drum connects with the outer drum. The draft through the mass of fuel is separated, half passing straight up into the center drum and through the upper radiator to the outer drum, and half passing through the arms of the crab directly into the outer drum, where it meets the other current at the smoke collar.

This point means that all portions of the radiating surfaces are heated with absolute uniformity and that the coal is thoroughly and evenly consumed without clinker. It means more heat for your money in the Paragon Furnace than in any other.

ISAAC A. SHEPPARD & CO.
NEW YORK PHILADELPHIA BALTIMORE

OLLO BEST BLOOM
ALVANIZED IRON

you think one make
ood as another, you
ot know Apollo.
o other make is
ally soft, flat, of uni-
n gauge and work-
.

American Sheet Steel Company
Battery Park Building
New York

WITH EVERY LINE OF.....
STEWART STOVES
We send attractive printed matter. It helps your sales and requires less explanation and time, and time is money, and Stewart stoves are great sellers.
FULLER & WARREN CO., Troy, N. Y.

FOLLANSBEE BROTHERS CO.,
328-330-332 Second Ave.,
Galvanized and Black Sheets.

Roofing Tin Plates: the best imported, Follansbee Bros. Co.'s Pure Iron Old Style; the best American, Scott's Extra Coated.

Philadelphia Branch,
133 Arch Street,
S. V. Reeves, Manager.

THE DIGHTON FURNACE Pages 13 and 26.

CROSBY SPRING-SEAT
GLOBE and ANGLE VALVES, IRON and BRASS.
All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.
Crosby Steam Gage & Valve Co.,
BOSTON: 95 Oliver St. NEW YORK: 78 John St. CHICAGO: 21 23 W. Lake St.

eam Specialties.
SF and NOISELESS BACK
ATOR VALVES, PRESSURE VALVES,
M TRAPS, PUMP GOVERNORS,
M AND WATER STEAM and OIL SEP-
ICING VALVES, ARATORS.
TEMPERATURE CONTROLLER and
No. 1 DAMPER REGULATORS.
KIELEY AND MUELLER.
W. 13th St., - NEW YORK.

Jenkins Bros.' Valves
are manufactured of the best steam metal, and are fully guaranteed. Why experiment with cheap valves? If you want the *BEST* ask your dealer for valves manufactured by Jenkins Brothers. Remember all genuine are stamped with Trade Mark like cut.
JENKINS BROTHERS, New York, Philadelphia, Chicago, Boston.

READ OUR "AD"
Page 25.
MAGEE FURNACE CO.,
Boston

ROUND OAK— STANDARD of AMERICA

CURTIS & GANDY CHI. 1900

We have towns
where no other
furnace but the
Round Oak
can be sold.
It wasn't easy
on the start.
It took time.

Price only had the floor when we arrived

but we kept trying
and secured
a chance,
and it has been
getting easier
ever since.
People will buy
good furnaces
if they have
the opportunity.

Estate of P. D. Beckwith, Dowagiac, Mich.

MAKERS OF GOOD GOODS ONLY.

37

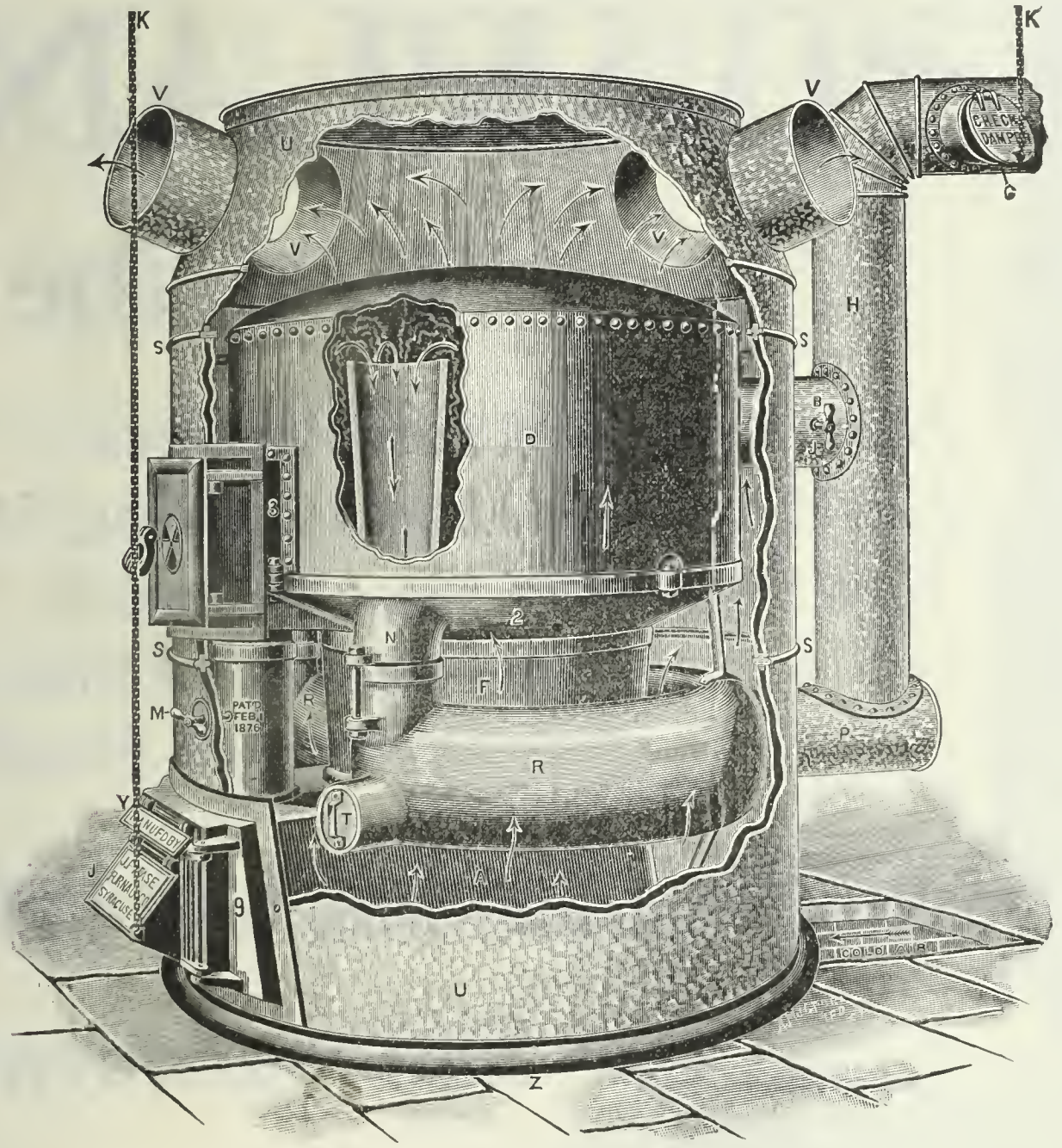
FB CHICAGO

Like a house builded upon the sand, so is a trade founded upon the sale of "Paste-Board" Heaters.

The dealer who sells "Economy" Furnaces builds upon the rock.

The PEASE-ECONOMY
WARM AIR FURNACE

Has proven the corner-stone of more than one steady, lucrative business.



LOW DOWN PATTERN

This is a Heavy, Durable Heater of the Highest Efficency, but of Moderate Price. : : : : : :

International Heater Co.,

UTICA, N. Y.

BOSTON, NEW YORK, CHICAGO, DENVER.

Largest Makers of Heaters in the World.

Nothing too

"GARLAND

For the S

New Models of Steel Ranges.
New Models of Steel Cooking Stoves.
New Models of Base Burners.
New Models of Sheet Iron
New Models of Sheet Iron

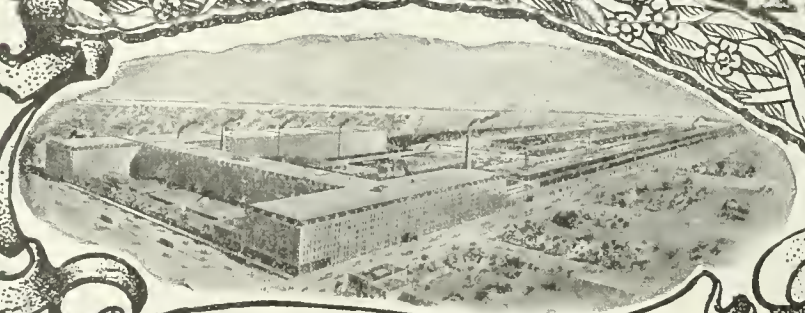
More New and Desirable Patterns

Our New Catalogue is

The Michigan

Largest makers of Sto

DETROIT. C


WORKS AT DETROIT, MICHIGAN.

Good for

AGENCIES

on of 1901.

New Models of Cast Ranges.
New Models of Cast Cooking Stoves.
New Models of Oak Stoves.
aters for Coal (Hot Blasts).
ters for Wood (Air Tights).

lan Have Ever Before Been Offered.

rs for the asking.

---

ove Company,

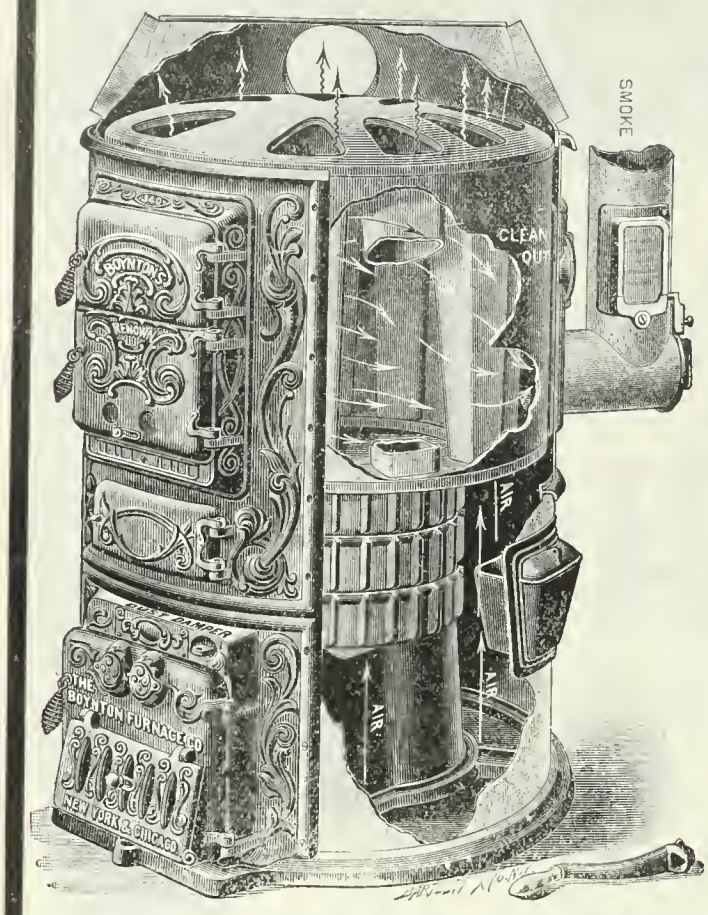
id Ranges in the World.

O. BUFFALO.

WESTERN HEADQUARTERS. CHICAGO.

BOYNTON'S "RENOWN"

PORTABLE FURNACE

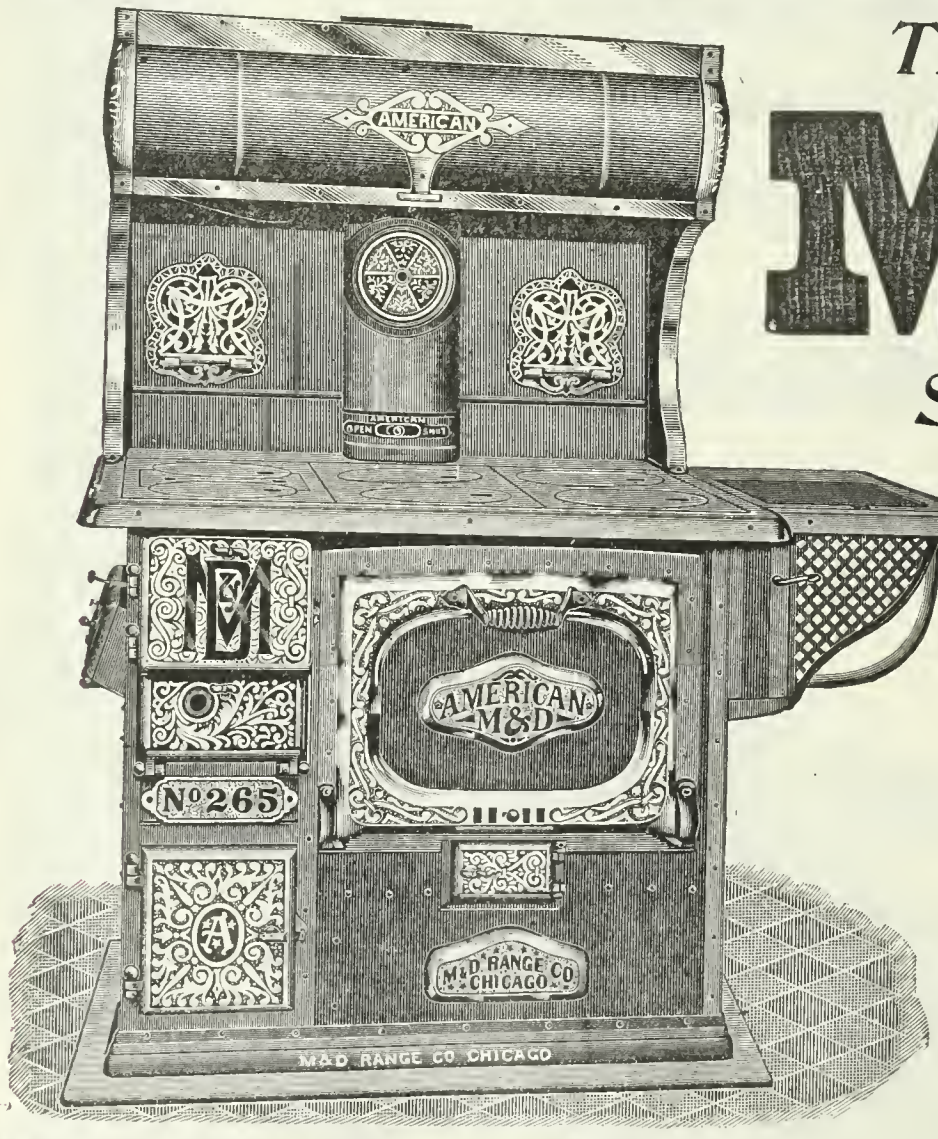


A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**

NEW YORK, CHICAGO.



The American

M & D

Steel Range.

BEST ON EARTH.

Made in 4 sizes, 16-18-20 and 22 inch ovens.

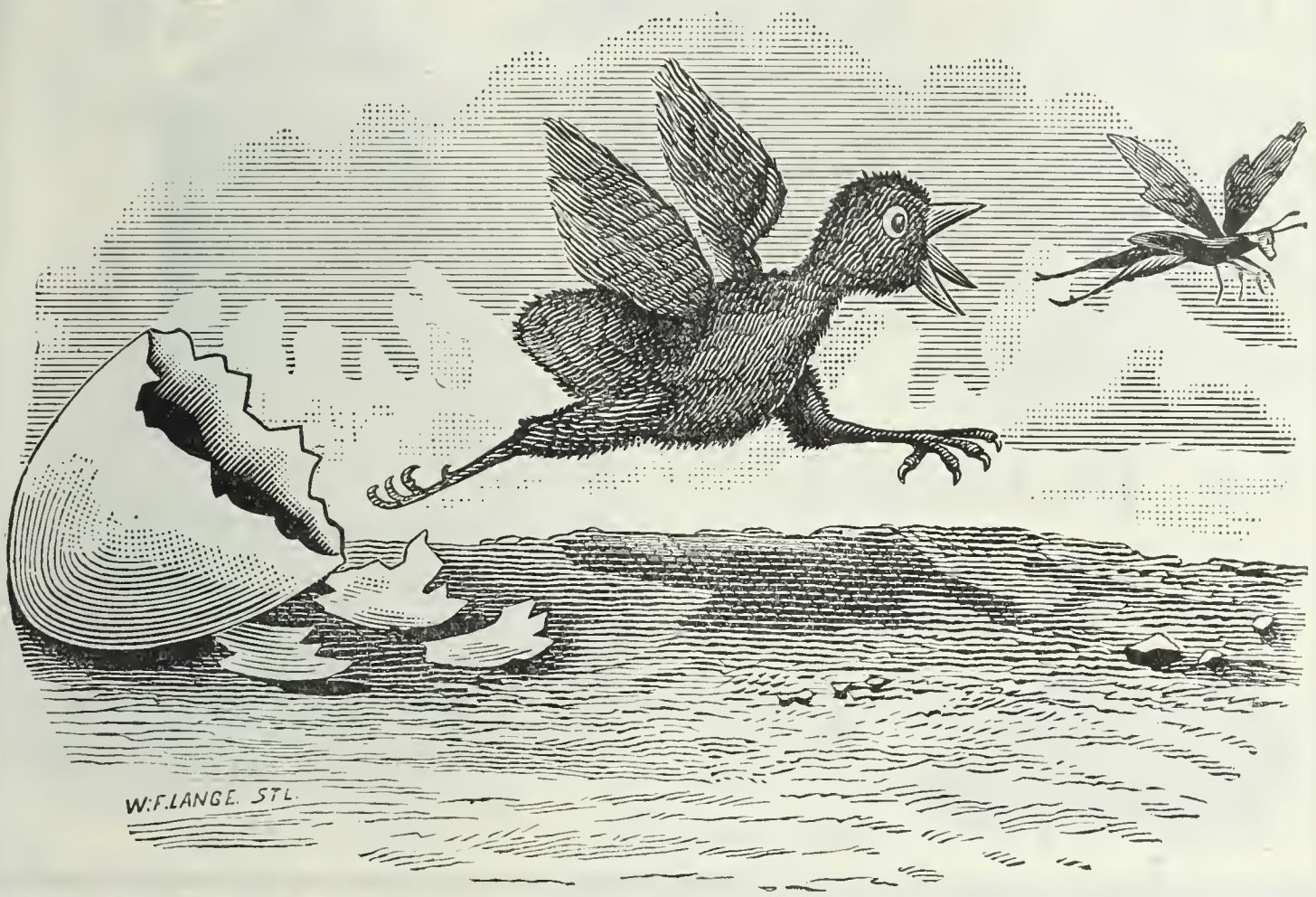
Portable reservoir, white enameled inside and out, or encased reservoir, as desired. Ovens iron framed, back flue made of heavy cast iron. ***Duplex, Dockash*** or ***Wood Grate, all slide out. Large poke door on end with or without feed pouch.***

This range will win out over all others in your city.

We make all sizes Family, Hotel and Combination Steel Ranges.

M & D RANGE COMPANY, = 96-98 Lake Street, Chicago.

"Quick Meal"



"Quick Meal" ENAMELED POLISHED Steel Ranges

Perfect in Construction, Perfect in Design and Appearance.

The Corner Tube construction gives their Side and End Walls a Smooth, Neat Finish and leaves no creases like those found in all riveted ranges.

The Steel Plates used in their Ovens are very heavy and well braced and will not warp. Every piece of the body and all holes in the body are cut and pressed out in large dies, consequently fit absolutely true.

"Quick Meal" Steel Ranges look well, last well, bake well, sell well and Stay Sold.

They are Friend Makers.

Ringen Stove Co.

ST. LOUIS.

Model Oak

Entirely New Line for 1901.

We use the old name, but the numbers are different.

The Round Air Tight Register is ground into its seat on the inside of the ash pit door and will remain at any degree of opening required to supply air for combustion through the opening.

The register construction is such that the **Grate Handle** can be pulled out through the register opening

The Extension on Top of the Fire Pot extends up inside of the steel drum and is cast solid with the fire pot so it cannot twist and warp.

The Sectional Ring fits over the flange turned out on the bottom of the steel drum.

The Ash Pan fits tightly all around the edges of the ash pit.

The joints remain tight.

The price is just right.

Ask for more information.

MODEL OAK.

The Portsmouth Stove & Range Co.,

THE BUSIEST MAKERS OF STOVES & RANGES IN THE WORLD

Portsmouth, O.

MORLEY BROS.,
Saginaw, Mich.,

Agents for Michigan and the Northwest.

A Range of the Times....

CANOPY SPECIAL.

Specially made to please special people at a special price.

Neat and Attractive in Design.

Construction Excellent Throughout.

Tasteful in Ornamentation.

The construc ion of the fire box, oven and flue system in the ***Canopy Special*** assures the greatest economy in fuel consumption and produces the most successful results in baking.

Ornamental High Shelf.

Ornamental Tea Shelf.

Large Reservoir or Water Front.

All Agents selling ***Canopy Ranges*** are protected against the usual competition of other ranges.

Write for Catalogue and Full Particulars.

FOUR SIZES OVENS.
SEVEN SIZES TOPS.

BUCKWALTER STOVE CO., - Box 10, - Royersford, Pa.

CRAWFORD

RANGES and OAKS

With the Latest Novel Features.

Our Oak outsells all others. It is fitted with either draw-centre or triangular grate, a deep ashpit and a real ashpan. Prices may attract you.

This new range has more talking points than any two ranges of other makes. Send for circular and read about our removable nickel rails.

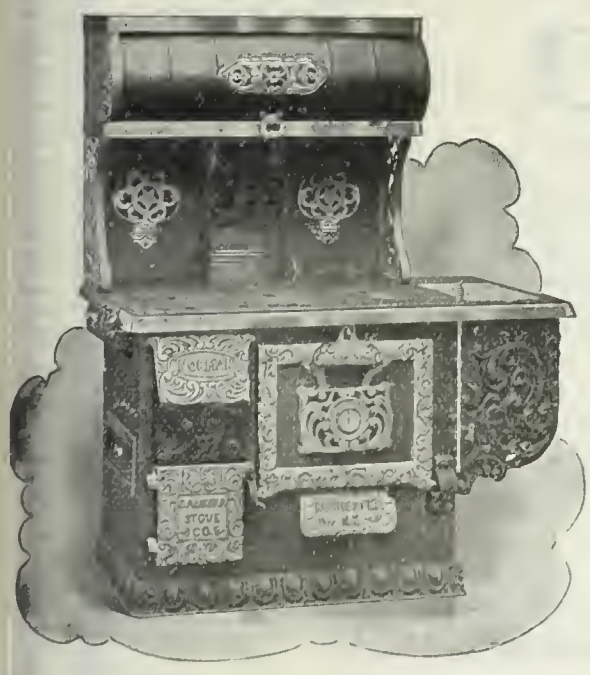
Walker & Pratt Mfg. Co.,

Finest Stove Foundry in the World.

31-35 Union Street, - - BOSTON, MASS.

"Norman" Steel Range.

BUILT LIKE A WATCH.



ATTRACTIVE.

ECONOMICAL.

DURABLE.

In the "NORMAN" Range are embodied up-to-date features that sell stoves.

The Fire Box is Oval in Shape and of Goodly Dimensions.

Either Duplex or Dockash Grates can be used. Grates removable through end door without removing any fire box linings.

Send for Illustrated Catalogue descriptive of our full line of Steel and Cast Ranges and Heaters.

GALUSHA STOVE CO., Makers, - ROCHESTER, N. Y.

A DOMESTIC SENTINEL

You need it in your business because your customer needs it If he sees it operate with heat of breath, etc., a sale is assured. Facts are facts. No other **HEAT REGULATOR** can show itself in that way. No mystery about it. Anyone can see just how, just why. and just what it must do. It's non-electric. Automatic. Write about it.

The **SPRAGUE DAMPER** and **VALVE REGULATOR.**

Howard Thermostat Company,
Oswego, N. Y.

M TRADE MARK

Moore's Quick Oven Stoves

M TRADE MARK

A Straight Proposition

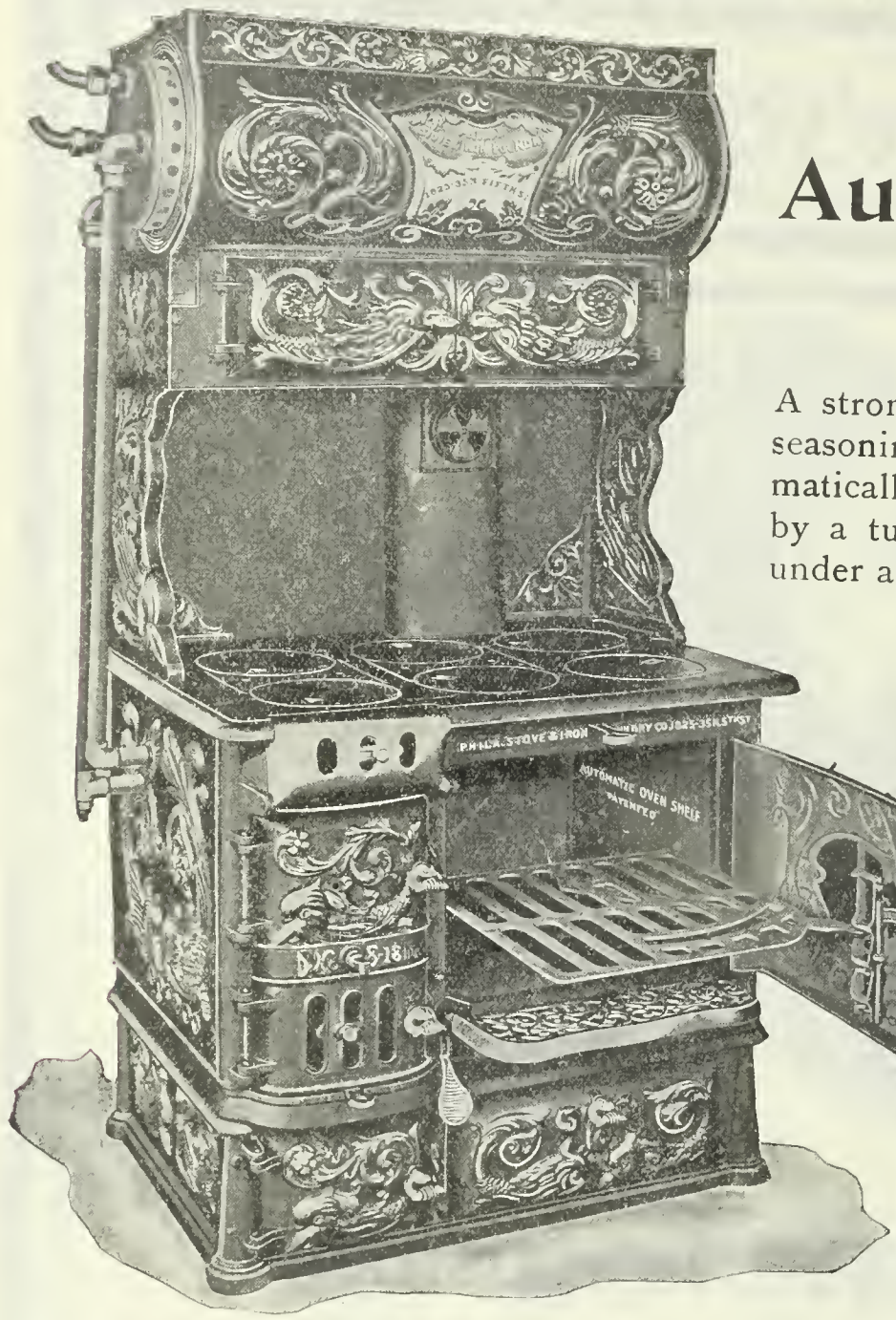
The Bottom of the Bottom is more important for you to know about than the top of the bottom. The top of the bottom may be apparently all right, and yet the bottom of the bottom be all wrong and so lacking for proper braces that it will HUMP ITSELF on the least provocation.

OUR BOTTOMS are all straight. We are at the bottom of the Steel Cook Stove business—made the first one, and have made more of them than all our imitators put together. We make them right, that's why—make the comparison yourself, and you will find that the bottoms in Moore's Steel Stoves are straight.

JOLIET STOVE WORKS, JOLIET, ILLINOIS.

HOLBROOK, MERRILL & STETSON, San Francisco, Sacramento, Los Angeles.

CLOVER TRIUMPH RANGES



Stand without a Rival

Observe the

Automatic Oven Shelf

(Patented Dec. 4, 1900).

A strong selling point. Indispensable for seasoning or basting. Is drawn out automatically in opening the door and released by a turn of the knob. Operates freely under a weight of 20 pounds or more.

---

3 Size Ovens,

Right or Left Hand.

16, 18 and 20 inches.

CLOVER TRIUMPH RANGES

embody ***improvements, individuality*** and ***labor saving devices*** not attainable on any similar goods of their class, and

PRICES ARE REASONABLE.

PHILADELPHIA STOVE AND IRON FOUNDRY,

1625 to 1635 N. 5th Street, PHILADELPHIA, PA.

AIR TIGHT HEATERS.

Our line in these comprises everything from the cheapest to the very finest finish possible to produce. Our manufacturing facilities and daily output justify us naming prices below any possible competition. This fact has enabled us to establish Wholesale Agencies in nearly every large city in the United States and makes it possible for us to supply the Dealer "Near His Door," saving time and freight. We also manufacture **Steel Ranges, Steel Cooks, Cast Ranges and Cooks, Hot Blast Coal Heaters, Oaks, Laundry Stoves, Radiators, etc.,** all up-to-date goods.

Write us for particulars and we will put you in the way of making some money.

EXCELSIOR STOVE & MFG. CO., - Quincy, Ills.

IT *ISN'T* good business to try to change a customer's choice.

It *IS* good business to use your knowledge of the goods that you are familiar with, calling attention to superior points of excellence and explaining as fully as possible why one article, of about the same general appearance, may be a great deal better, more economical and more satisfactory in every way, than another at about the same price.

It's easy to do this in range selling if you have the "***Home Winthrop.***"

In other ranges you can't tell your customer of any particular difference in their real worth without telling what isn't so.

With the "***Home Winthrop***" you can easily show the difference and explain why and how it is better. Your customer can see for himself.

There's no range handsomer in appearance.

No other range heats ***ALL of five sides of the oven, or has a dust flue*** which takes ***all*** the dust up the chimney when you shake the grate.

No other range will do the same amount of baking and boiling with as little fuel.

The "***Home Winthrop***" has every modern attachment common to other ranges that is of any value whatever.

It stands alone as having special valuable improvements not to be had on any other range.

Test it that you may prove to your own satisfaction how much better it is and how little fuel is necessary.

Set it anywhere, under any conditions where any cooking range can have a severe test, and you become an advocate of the "***Home Winthrop***" range always.

DIGHTON FURNACE CO.,
TAUNTON, MASS

The Monitor Base Burner

High Art Series.

Positively the most powerful Heater made.
Most novel in construction.
Embodying more salable features than any other.
Possessing greater heating circulation than any other.
A thoroughly up-to-date heater.
Send for complete description.
Secure the agency at once.

The WM. RESOR & CO.,

CINCINNATI,
U. S. A.

STAR STOVES AND RANGES
ENTERPRISE STOVE CO. VINCENNES, IND.
GUARANTEED

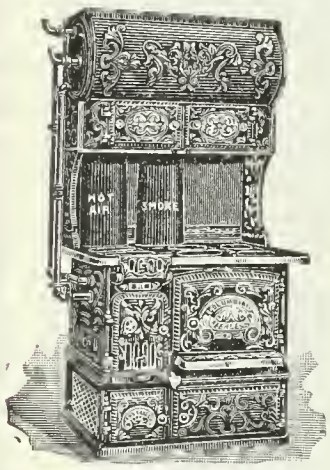
CATALOGUES SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

DEALERS, BUILDERS AND OWNERS



Should secure our Line of Goods. They will then have the Best on the Market.

The Columbian Banner, Comet, Prince and Climax Furnaces, and the Columbian Peerless, Victor, Newport, Star and Triumph Ranges are all substantial, efficient and economical.

ALL KINDS OF WOOD AND COAL

Airtights, Base Burners, Globe and Cylinder Stoves, Gasolene and Oil Stoves.

Write us for full information and catalogues.

THE KEELEY STOVE CO.,

COLUMBIA, PA.

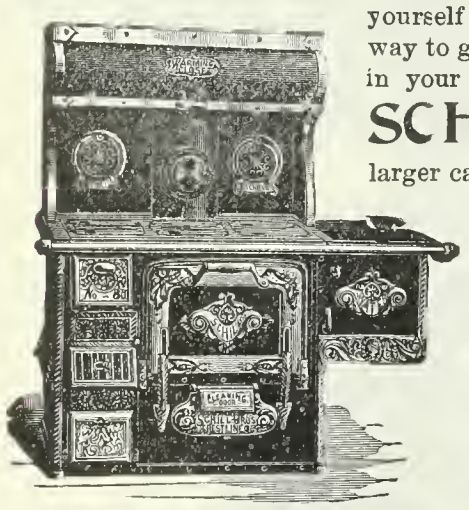
COLUMBIAN LINES.

COLUMBIAN LINES.

Chicago Branch: JACOB RETTERER, 167 and 169 Lake St., Chicago, Ill.

DON'T

handicap yourself in the stern competitive struggle after business by handling an inferior range or furnace. You can't afford to pursue such a course or you will find yourself in the rear division of the procession. The way to get to the front in the furnace and range trade in your town is to handle recognized leaders like **SCHILL** **FURNACES** and **RANGES.** The company making these ranges has a larger capitalization and greater facilities than ever before, and these goods are to be even more widely known in the future than they have been in the past.



Write us for catalogue and discounts.

THE SCHILL BROS. CO.,

CRESTLINE, O.

OAK STEEL!

WE HAVE IT.

The steel strike has caused a grand shortage of Oak Stove Body Steel.

Our contract with the Manufacturers enables us to command an unlimited supply of the *genuine first grade Oak Body Steel* of the highest polish.

Don't accept Oak Stoves mounted with inferior bodies of common iron. We supply the genuine steel.

Write us for prices and descriptive circulars on our line of oaks.

Stewart Oak.

Triangular or Draw Center Grates.

THE VERY BEST.

Splendid Oak.

Triangular Grates.

Good Enough for Anybody.

Matchless Oak

Draw Center Grates.

MODERATE IN PRICE,
BUT A GOOD HEATER.

Each line made in three sizes. Double heaters if you want them.

Send us your orders, and we will take care of you.

FULLER & WARREN CO., = Troy, N. Y.

Look at our Ad on the Front Page.

FROM THE RED CROSS LINE OF

ORNAMENTED CAST FRONT. TRIANGULAR GRATE.

THE NEW

"Ajax" Furnace.

THE MOST FURNACE FOR THE LEAST MONEY IN THE MARKET.

With Steel or All Cast Iron Radiator.

Furnished, when ordered, with

DOWN DRAFT

HOT BLAST GAS AND SMOKE CONSUMER.

Also, when ordered, we supply the popular

TWO BAR ECLIPSE REGULATOR.

Send for descriptive Catalogue.

The Bermuda

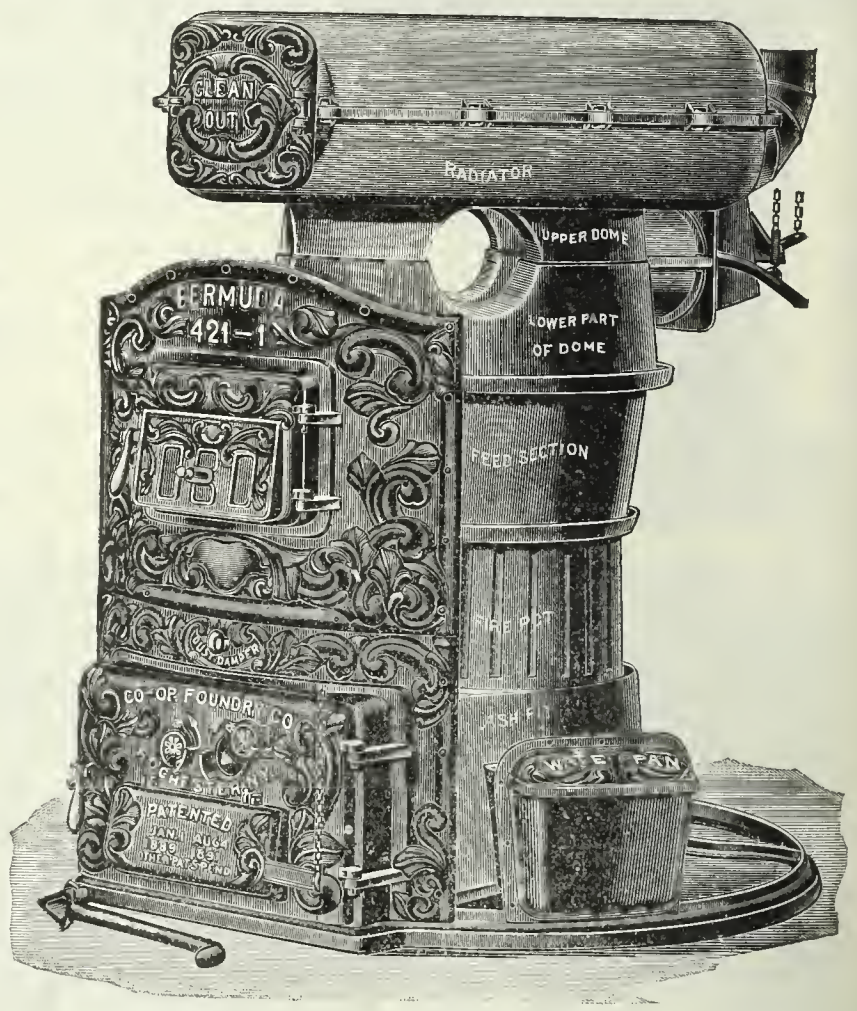
Greatest of Hot Air Furnaces.

The Embodiment of Simplicity, Efficiency and Economy.

HIGHLY ORNAMENTED CAST FRONT.

DOUBLE RADIATORS.

TRIANGULAR GRATE.



Manufactured by.... **CO-OPERATIVE**

Western Agency, J. P. LINDE

OVES, RANGES AND FURNACES.

Red Cross Pilot Range

Brand New.

FOUR HOLES.

For Hard or Soft Coal or Wood.

Duplex or Dock Ash Grate.

The Cheapest Yet.

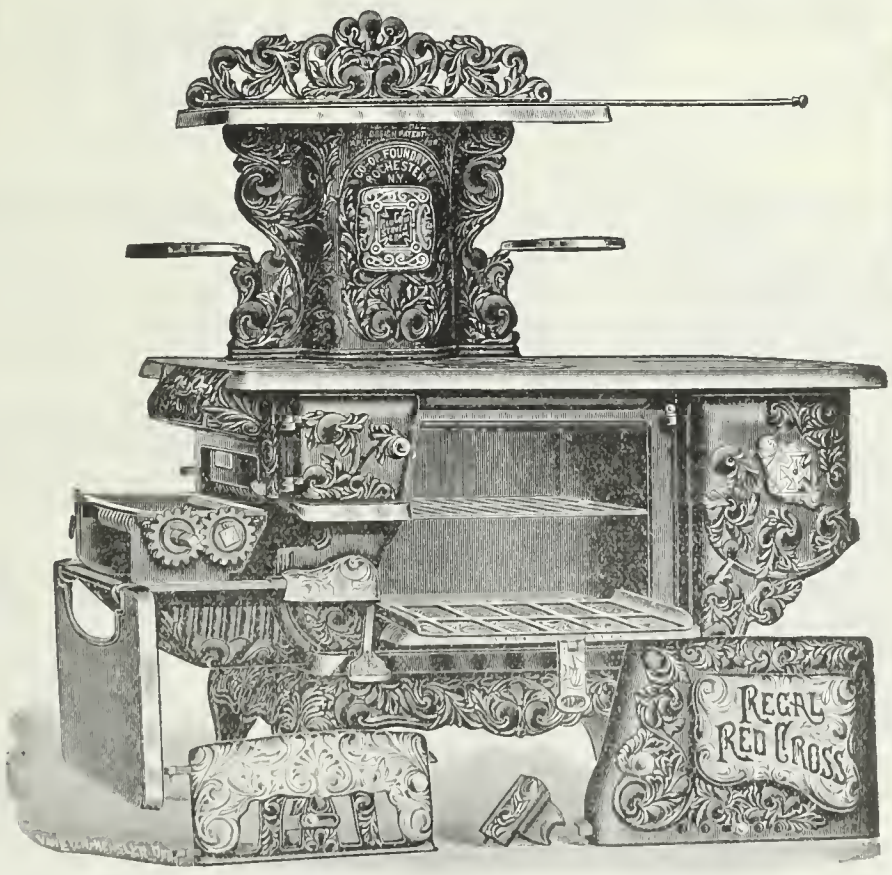
Regal Red Cross Range

he Handsomest in the Trade.

FOUR HOLES.

or Hard or Soft Coal or Wood.

Duplex or Dock Ash Grate.



OUNDRY CO., Rochester, N. Y.

N & SONS, Milwaukee, Wis.

JEWEL STOVES AND RANGES.

JEWEL STOVES AND RANGES
DETROIT STOVE WORKS
LARGEST STOVE PLANT IN THE WORLD

A Complete, Well Advertised Line; Low Prices and Good Workmanship.

Please Write for Catalogue.

DETROIT STOVE WORKS.

Detroit - Chicago.

Up-to-date Air-Tights.

COSEY—Style C. HOT BLAST.

We Want Your Business!

Our Goods Are Strictly HIGH-GRADE and DURABLE.

We Make 65 Styles and Sizes of AIR-TIGHT HEATERS.

Our Heaters are made of Blue Polished Steel. Superior Finish. Best Proportioned Stoves made. Our Castings are Smooth. Our Mounting is perfect.

Screw Draft, Spark Arrester, Extra Heavy Linings, Plate in Cover, Hinged Cover, Reinforced Tops that will not Warp.

Fuel Opening made with Wire Edge, preventing buckling and getting out of shape

Bottoms Double Seamed. Feet Bolted to Cleats underneath Stove to prevent slipping.

Large Capacity. Prompt Shipment GUARANTEED.

Quincy Foundry & Novelty Co.,

QUINCY, ILL.

Write for Catalogue and Prices.

ROYAL—Style A.

STOP!

If you're looking for a Steel Range combining all the qualities which go to make an article of that kind desirable—

High Grade Materials and Workmanship,
Correct Construction, Operation Guaranteed,
Modern Design, Latest Improvements,
Low Price—you have it in the

Triumph Eclipse New "D" Series.

THE BEST LINE OF LOW PRICED RANGES ON THE MARKET.

The Eclipse Stove Co., Mansfield, Ohio.

Repositories at St. Anthony Park, Minn.; Omaha, Neb.; Denver, Col.

Gurney

HOT WATER GENERATORS
HOT AIR GENERATORS
STEAM GENERATORS
RANGES *and* STOVES
REFRIGERATORS
STEEL RANGES
GAS RANGES
FURNACES

GURNEY AND COMPANY

WASHINGTON, HANOVER AND ELM STREETS

BOSTON, - MASSACHUSETTS

THE ETNA FURNACE

Is a furnace worth talking about and selling.

It is the result of twenty years' experience in hot air practice, and knowing the wants and the requirements necessary to produce su cessful, satisfying results we made the Etna accordingly.

The Etna contains many strong, practical features not found in the majority of others. We feel satisfied they will meet the approval of every dealer who has been up against the heating problem and encountered its difficulties. We have smoothed out some of the rough places.

READ THE CATALOGUE. SENT FOR THE ASKING.

Pittsburgh Stove & Range Company

PITTSBURGH, U. S. A.

BRIGHTON AIR-TIGHT HOT BLAST.

Patent Applied for.

SOMETHING NEW!

THIS is not an every day "Air Tight Stove" that almost every stove foundry makes. While the general construction is the same, the principle is different

This stove is furnished with a blow pipe fastened to inside of feed door and extends inside to the center of fire pot and is controlled by a screw register on outside of feed door.

DIRECTIONS FOR USING:

Close up all openings below feed door and regulate your fire entirely by screw register in the feed door.

By following these instructions you will produce more heat with this stove and consume less fuel than with any other stove made.

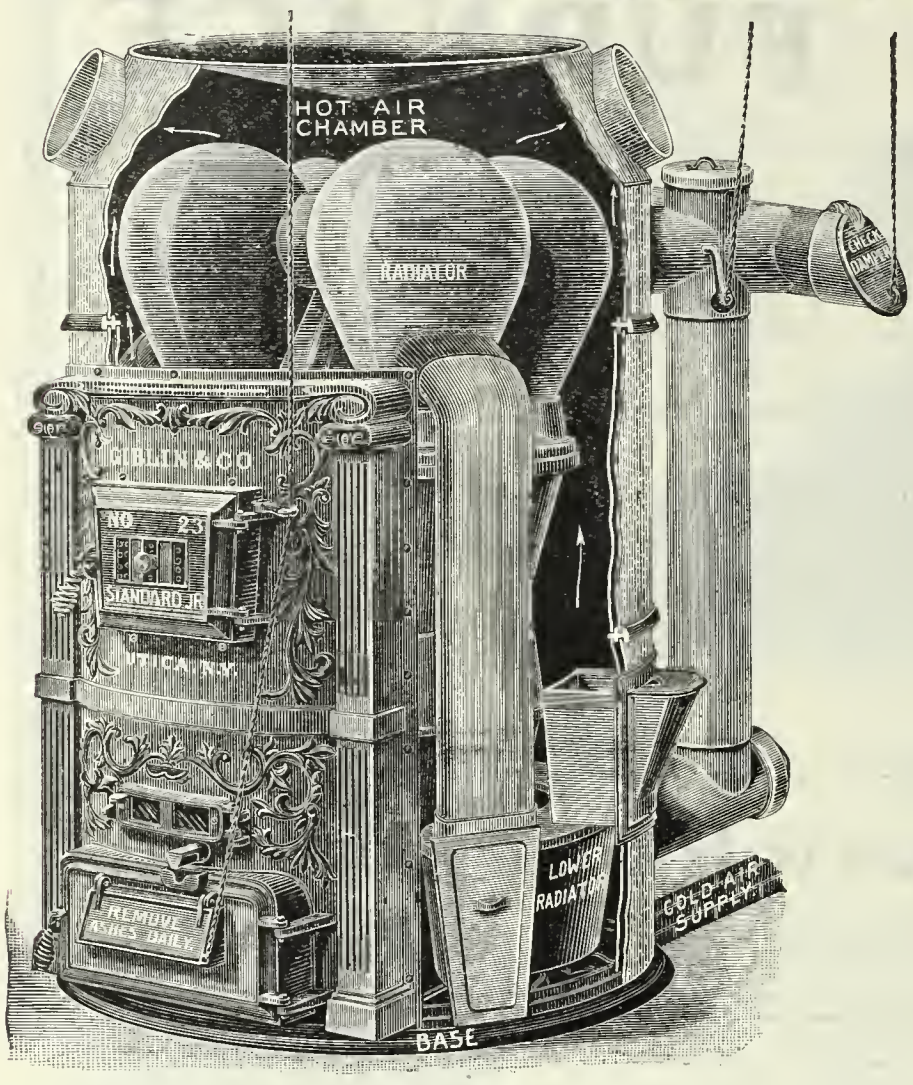
WRITE FOR PRICES AND SECURE THE AGENCY FOR THE BEST LINE ON EARTH.

JOHN A. SCHULTE & CO., Cincinnati, O., U S. A.

Manufacturers of

Steel Ranges, Cast Ranges, Oak Stoves, Etc.

TOUCH A MAN'S POCKET



and you touch a sensitive spot. If your customer asks for a furnace and you furnish him with the cheapest furnace obtainable, it surely is not the best and he will judge all other furnaces by what he gets He will, by using the cheapest furnace, burn more coal than he should; will burn it imperfectly.

IT WILL

cause more work, need frequent repairs, make him thoroughly dissatisfied. Such are the results of a direct draft furnace. We present the furnaces illustrated herewith to

SHOW

what indirect draft furnaces can accomplish. Nobody now uses a direct draft heating stove, because of the waste of fuel and the impossibility of regulating it.

These Furnaces

are in furnaces what base burners are in stoves and

Secure

for the user the benefit

of **Heat** without

wasting fuel They are operated with a steady, low fire, providing an even, continuous temperature

In Every Room.

Whichever dealer secures the agency of these furnaces is sure to get the bulk of the business; and because he is selling something different from all other dealers will make sales at a good profit and make every one sold an advertisement for his business.

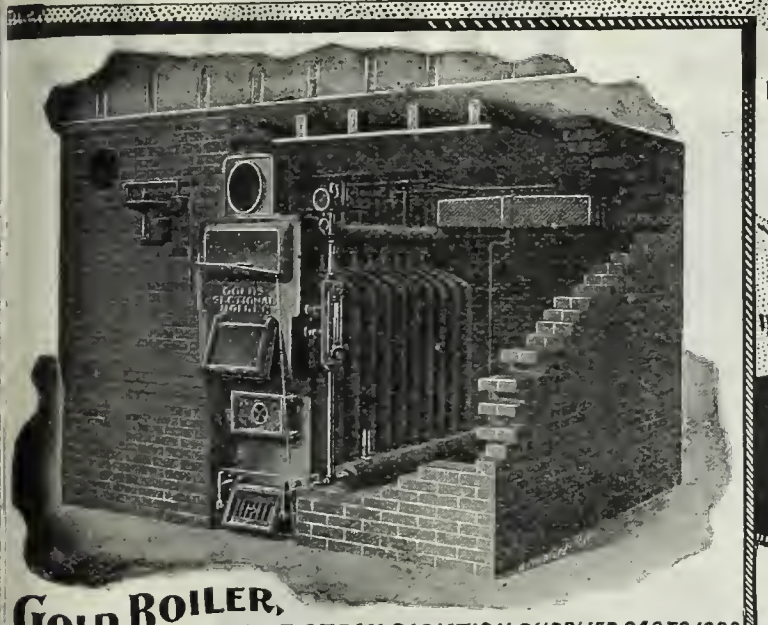
Dealers who have sold other furnaces and have found no profit in the business should investigate the merits of these furnaces and secure the agency and exclusive territory.

OUR CATALOG FULLY EXPLAINS.

GIBLIN & CO.,
UTICA, N. Y.

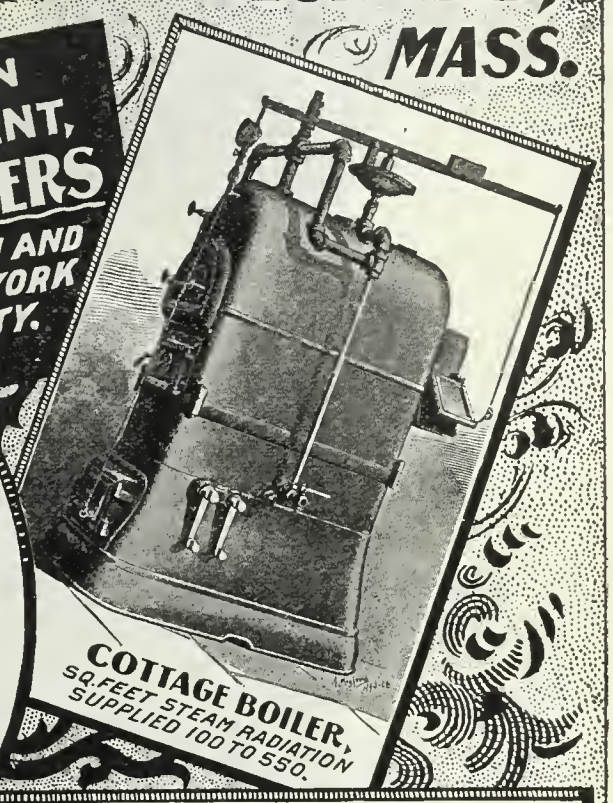
THE H.B. SMITH CO.

WESTFIELD, MASS.



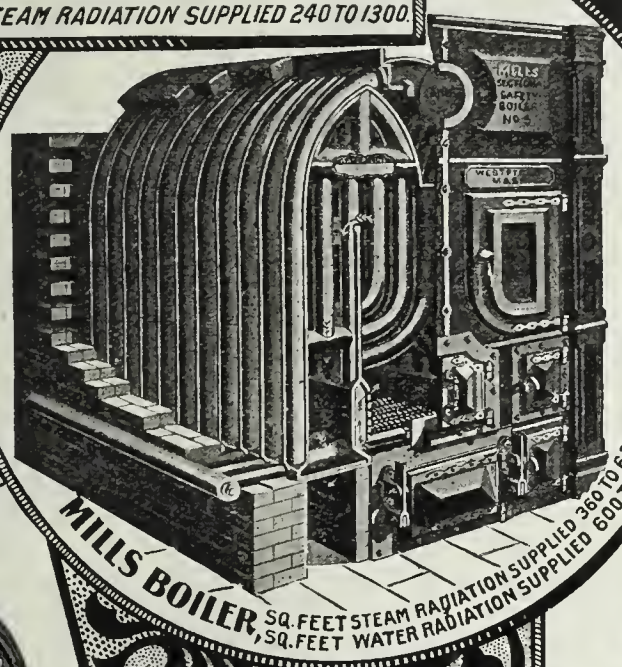
GOLD BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

EUROPEAN AGENT,
AUG. EGGERS
BREMEN AND NEW YORK CITY.

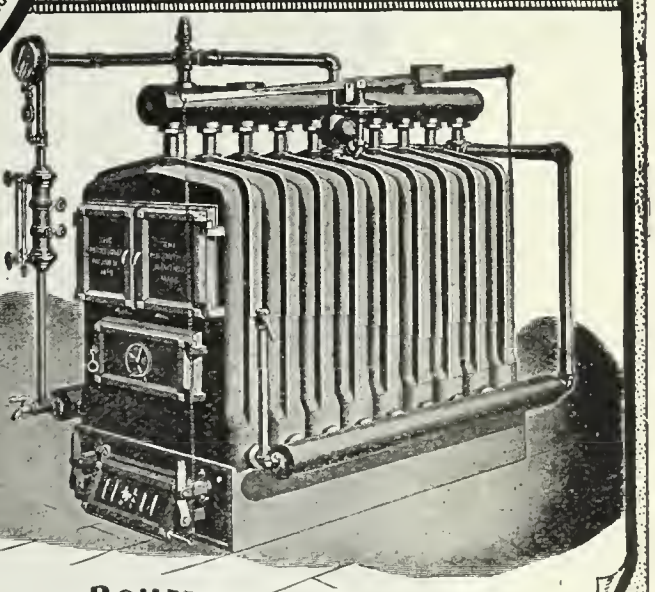


COTTAGE BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 100 TO 550.

PACIFIC COAST AGENTS,
DUGAN BRO'S.
SAN FRANCISCO CAL.

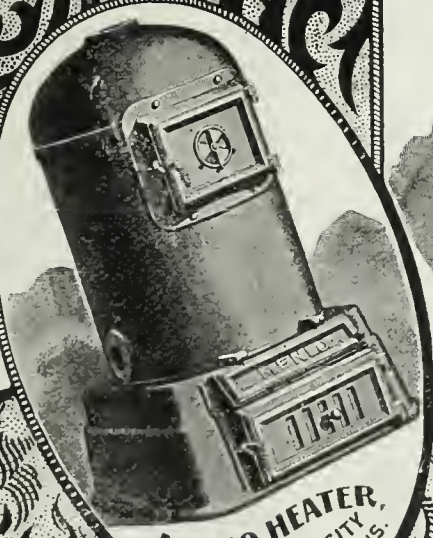


MILLS BOILER, SQ. FEET STEAM RADIATION SUPPLIED 360 TO 6250.
SQ. FEET WATER RADIATION SUPPLIED 600 TO 10400.



MERCER BOILER,
SQ. FEET STEAM RADIATION SUPPLIED 300 TO 3500.

COTTAGE BOILER,
SQ. FEET WATER RADIATION SUPPLIED 150 TO 1000.



MENLO HEATER,
TANK CAPACITY 100 TO 180 GALLONS.

Western Agents

WESTERN BRASS MFG CO.

ST. LOUIS, MO.

SALESROOMS:
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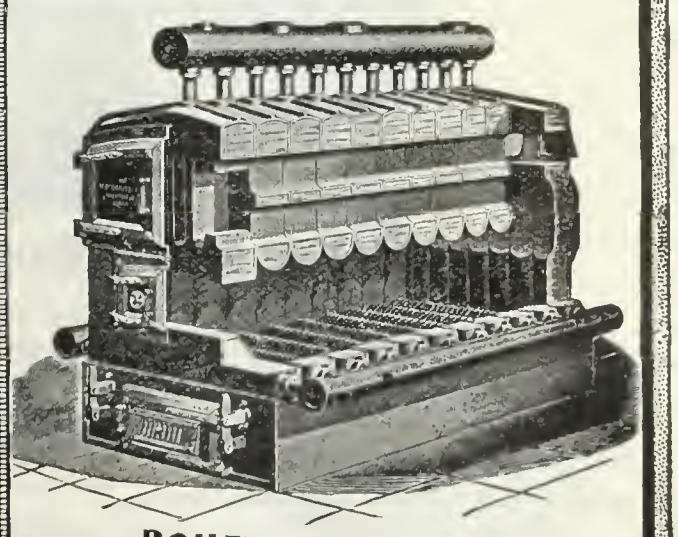
510 ARCH ST., PHILADELPHIA, PA.



MERCER BOILER,
SQ. FEET WATER RADIATION SUPPLIED 500 TO 5800.

BUY THE BEST.

NEW SUPERIOR OR UTICA HEATERS.

Thoroughly first-class and up to date in every feature. Extra deep ash pit, large fire pot and grate areas. Immense combustion chamber. Powerful radiating surfaces. Ornamental shield front. A most substantial and durable apparatus economical in fuel, mounted low down, and fitted with our ***Improved Gas Ring*** for burning natural gas, or with ***New Hot Blast Attachment*** for soft coal, ***Steel or Cast Radiator.*** Absolutely free from dust, gas or smoke.

Send for new illustrated catalogue, describing our large line of Furnaces and Heaters.

UTICA HEATER CO., UTICA, N. Y.

CHICAGO HEATER & SUPPLY CO., Western Managers, 54 Dearborn St., Chicago, Ill.

MR. DEALER:

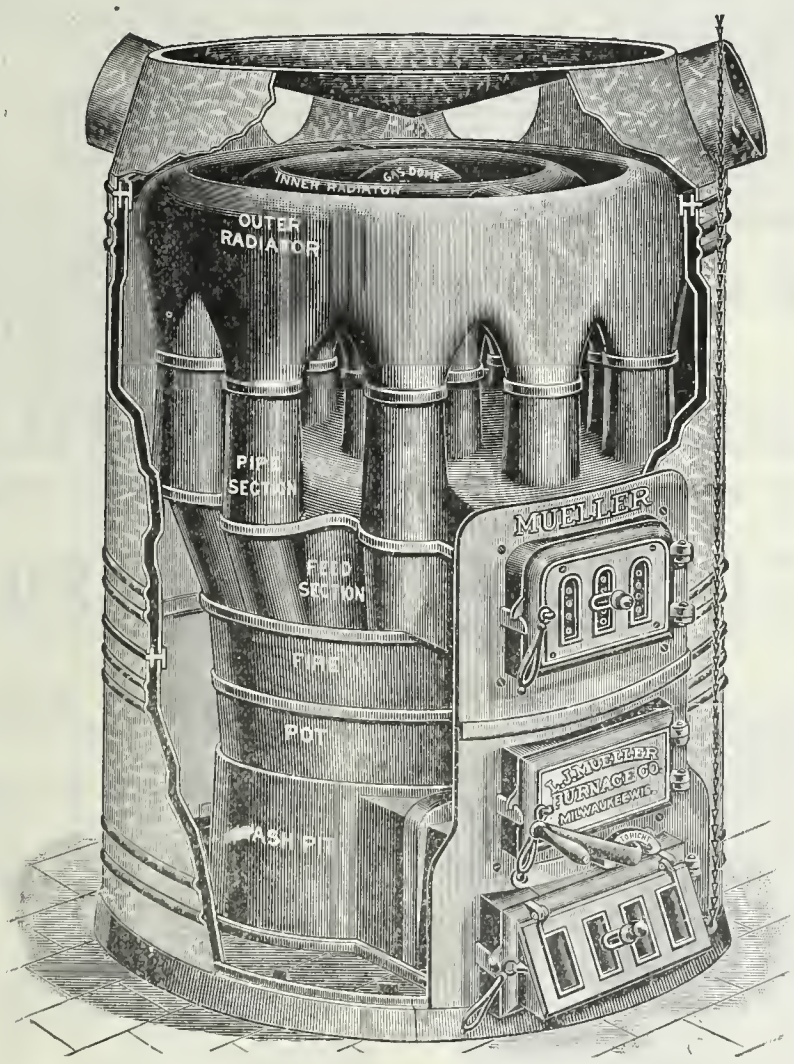
DOES NOT THIS FURNACE APPEAL TO YOUR JUDGMENT AS BEING A POWERFUL, DURABLE AND ECONOMICAL HEATER? IF SO, WILL IT NOT APPEAL TO YOUR CUSTOMERS IN THE SAME MANNER?

WRITE TO-DAY FOR OUR CATALOGUE AND PRICES.

ECONOMICAL

DURABLE

NO EXPERIMENT



NONE AS GOOD

SELF CLEANING

FAULTLESS

MANUFACTURED BY

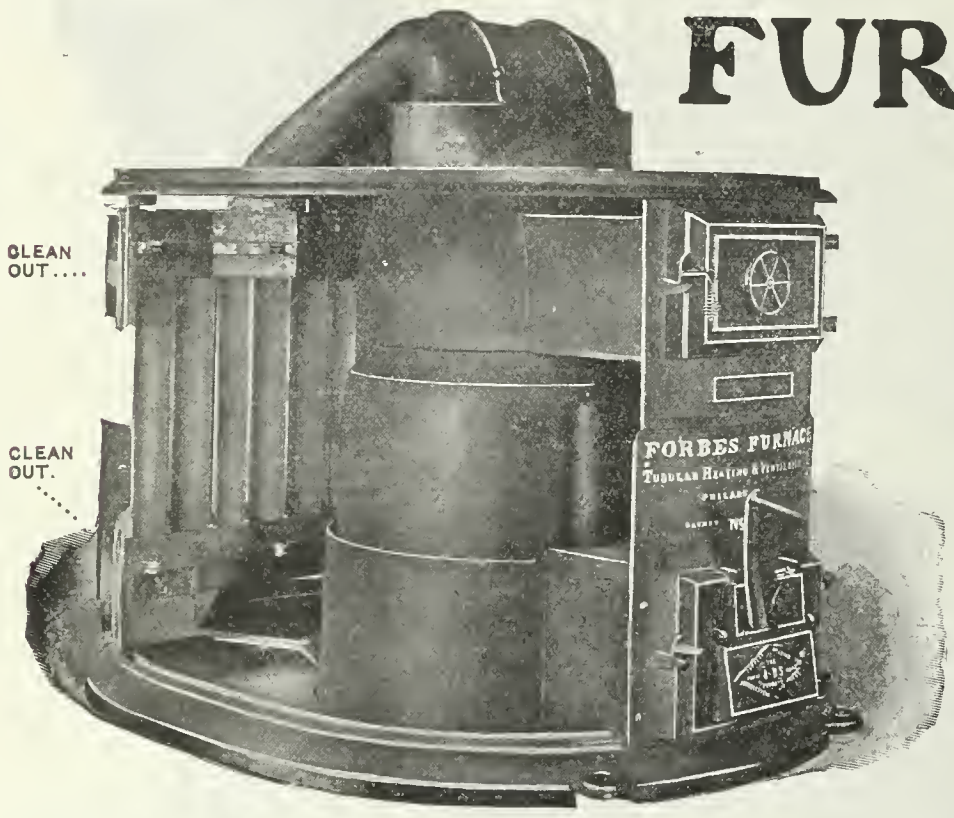
L. J. MUELLER FURNACE CO.

MILWAUKEE, WIS.

Established 1857. Office and Salesroom, 190 Reed St.

EVERYTHING IN THE HEATING LINE

FORBES (IMPROVED) WARM AIR FURNACE.



ONLY 4 FEET 3 INCHES HIGH.

Compact and Simple Construction.

Aluminum Tubes

IN RADIATOR
ARE RUST PROOF.

Triplex Grate.

PERFECT SHAKING. PERFECT DUMPING.

Each Bar can be separately replaced.

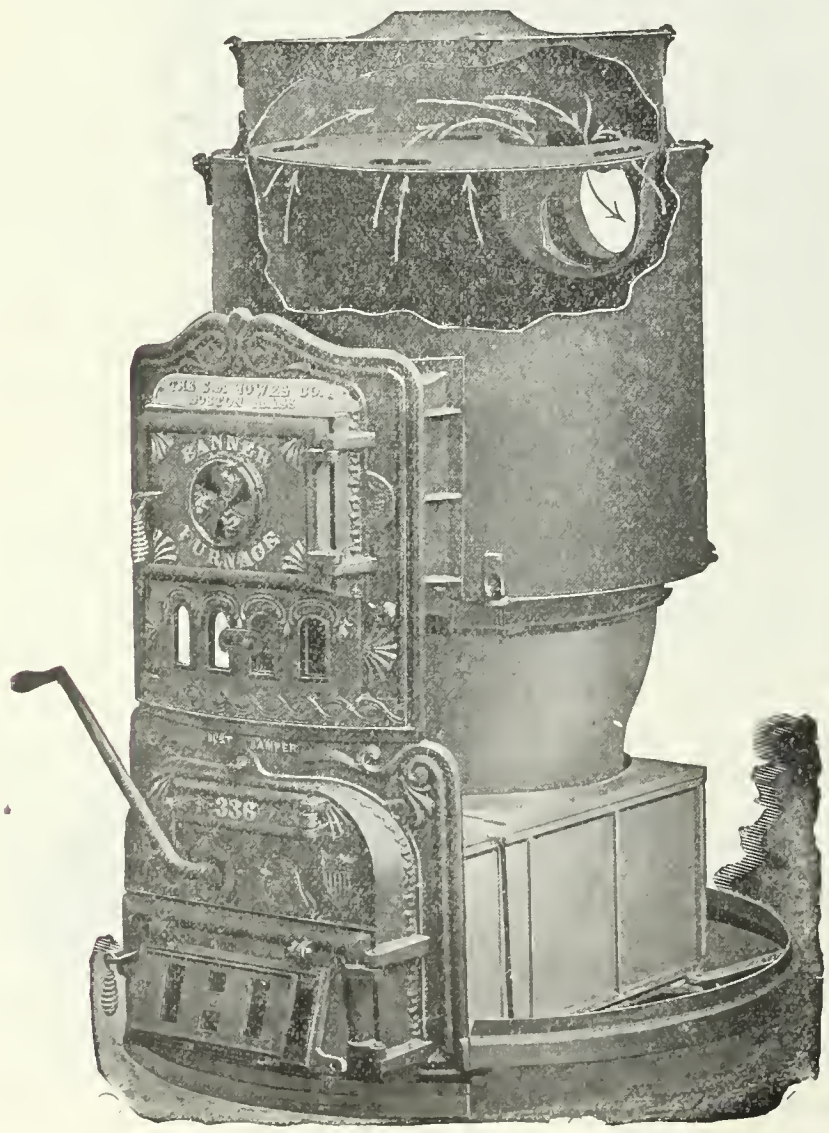
Forbes Furnaces Save the heat others waste up the chimney and s end it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE AND PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

232 Quarry St., PHILADELPHIA, PA.

BANNER FURNACE IMPROVED FOR 1901



Deeper Ash Pit
Solid Front Shield
Triangular Grate

The original Banner Furnace has been universally acknowledged to be unexcelled as a heater. Banner Furnaces have been on the market eight years and have proven themselves strong and durable.

Time Tested

Modern Construction and Durable
Of Great Capacity
Very Low in Price

PUT A SAMPLE ON YOUR FLOOR

They are as Salable as Heating Stoves

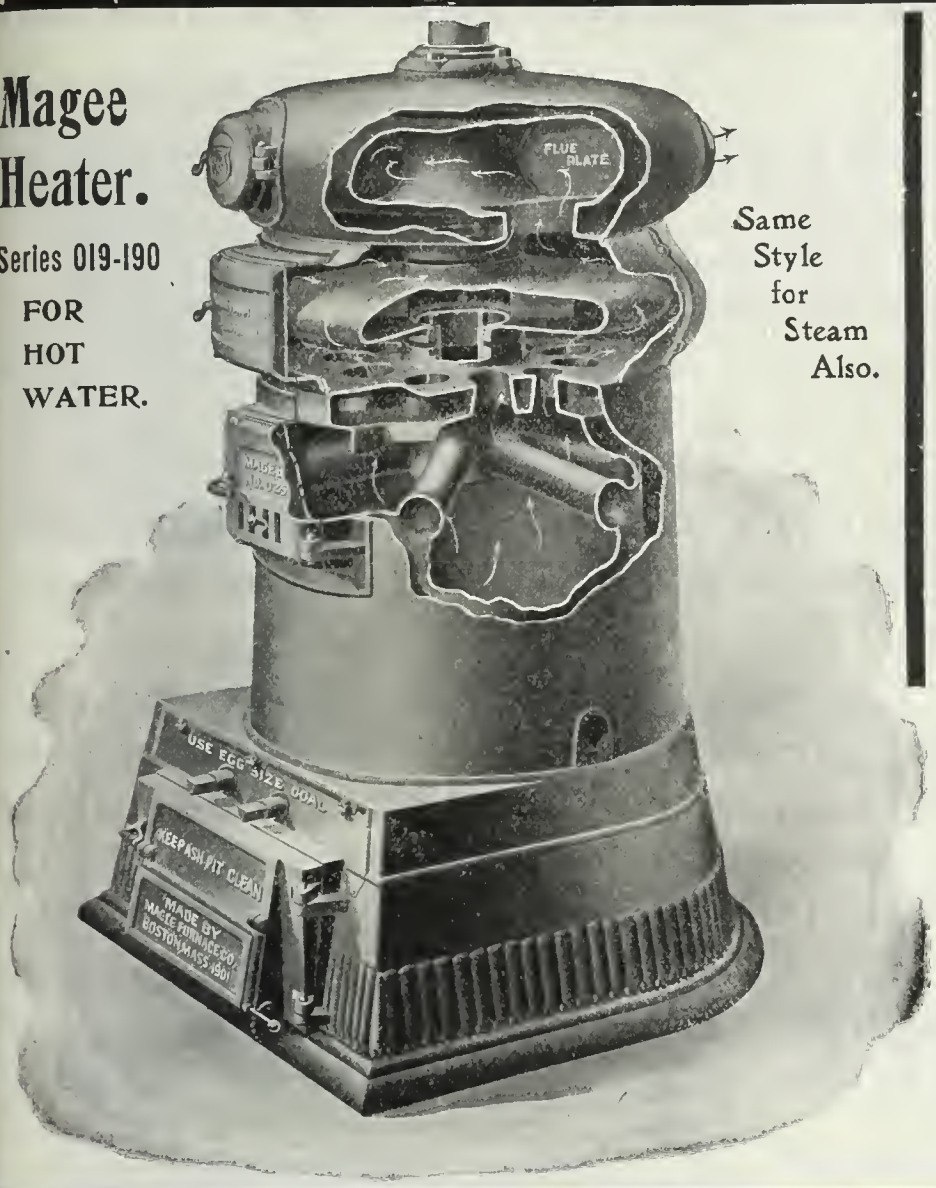
THE S. M. HOWES COMPANY

40, 42, 44, 46 Union Street
BOSTON, MASS.

Magee Heater.

Series 019-190

FOR HOT WATER.



Same Style for Steam Also.

Note flue capacity—indirect. No local circulation in this heater—impossible.

See also extraordinarily large amount direct fire surface.

Capacities: 600 to 1800 sq. ft. in Hot Water Heaters; 350 to 1100 sq. ft. in Steam Heaters. 5 sizes of each.

Magee Furnace Co.

Boston, 32-38 Union St.

Steam and Hot Water Heaters, Hot Air Furnaces, Combination Hot Air and Hot Water Ranges. Largest line under one name in the United States.

IDEAL

BOILERS

1901

OUR NEW

Boiler Catalogue

NOW READY.

A postal card request will secure a copy...

AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,

CHICAGO.

New York, Philadelphia, Buffalo, St. Louis, Minneapolis and Denver.

——— ———, Mass, August 26th, 1901.

DIGHTON FURNACE CO, Taunton, Mass.

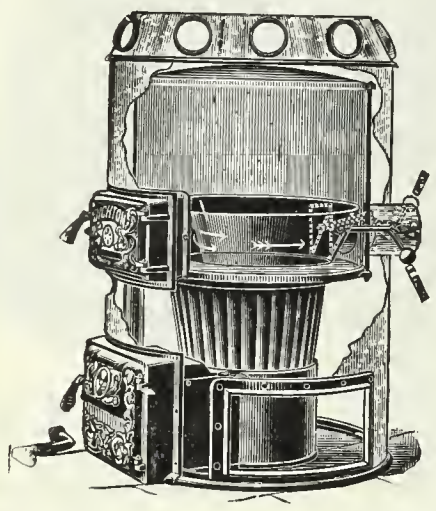
Gentlemen:—Will you please ship me 3 No. 21 "**DIGHTON**" Furnaces, with Casings, Cone Top.

Last winter I put in 2 of the "**DIGHTONS**" for this party and now he wants three (3) more. Please ship at once as he wants 2 of them in before September 20th.

Also send 10 10 x 14 Black Japanned Registers and Borders.
13 8 x 10 " " " "
60 feet 7 inch Hot Air Pipe. 20 8 inch Hot Air Elbows.
75 " 8 " " " 18 7 " " "

Yours respectfully, ——— ———

Our price for the "DIGHTON" is very much less than what other Furnaces of anywhere near equal worth are sold for.

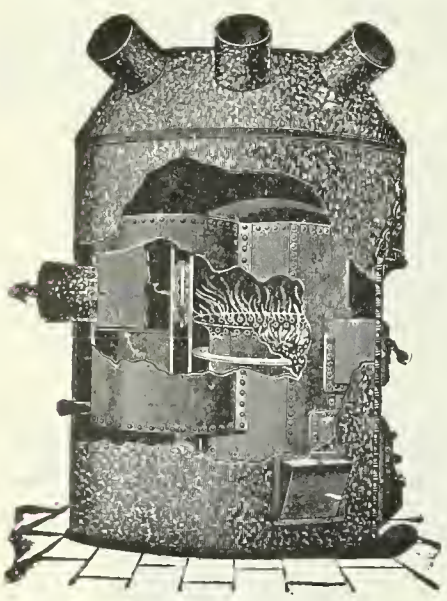


Our prices for Registers, Borders, Hot Air Pipe and Fittings are guaranteed to be as little; probably less than goods of equal quality are sold for.

We earnestly solicit a trial order for a "DIGHTON" Furnace.

We can and will help you to introduce and promote the sale and give you the exclusive sale of it in your locality.

DIGHTON FURNACE CO., - - - Taunton, Mass.



WEIR ALL STEEL GAS AND SOOT CONSUMING **FURNACE.**

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat producer but a fuel saver.

MANUFACTURED BY

THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

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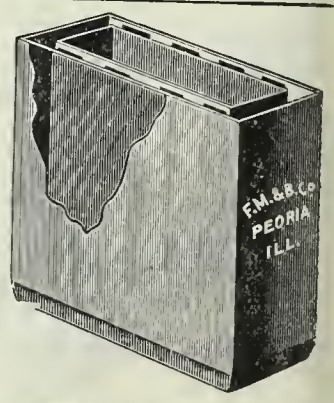


"The Handy Furnace Pipe."

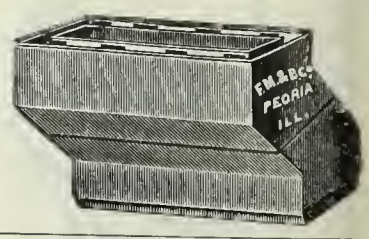
MADE WITH A VIEW OF BEING SAFE.

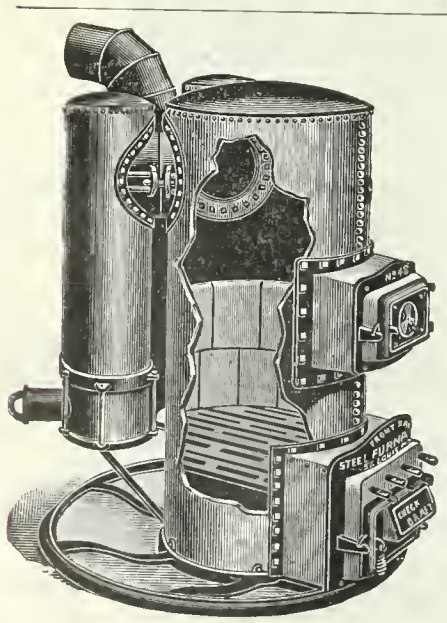
The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,

SEND FOR CATALOGUE. PEORIA, ILLS.





Front Rank Hot Air Furnaces

are built on vertical lines; air comes in direct contact with entire heating surface.

The Front Rank Fire Chamber is one solid sheet of closely riveted steel; being lined above the fire lines with genuine fire clay tiling it is the most durable made.

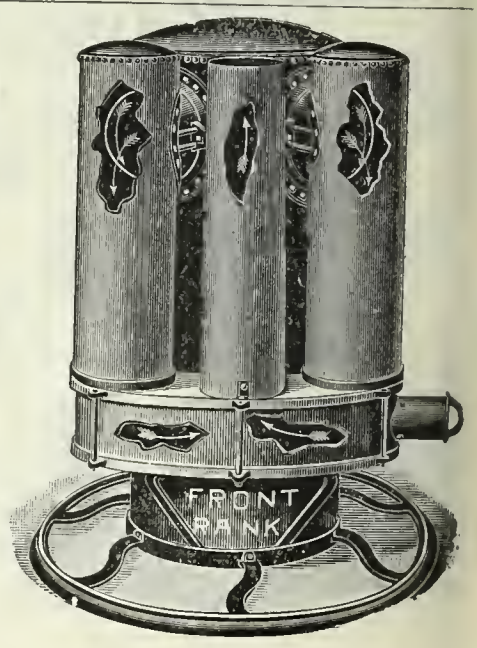
The radiators are very large and have an unusual area of heating surface in comparison with the size of fire pot.

These furnaces burn hard or soft coal or coke. We also make wood burning furnaces.

Send for our catalogue, it will give you a better idea of what we make.

FRONT RANK STEEL FURNACE CO.,

2301 to 2309 Lucas Ave., St. Louis, Mo.



400 Series Hot Water Heater.

THE NAME

GURNEY

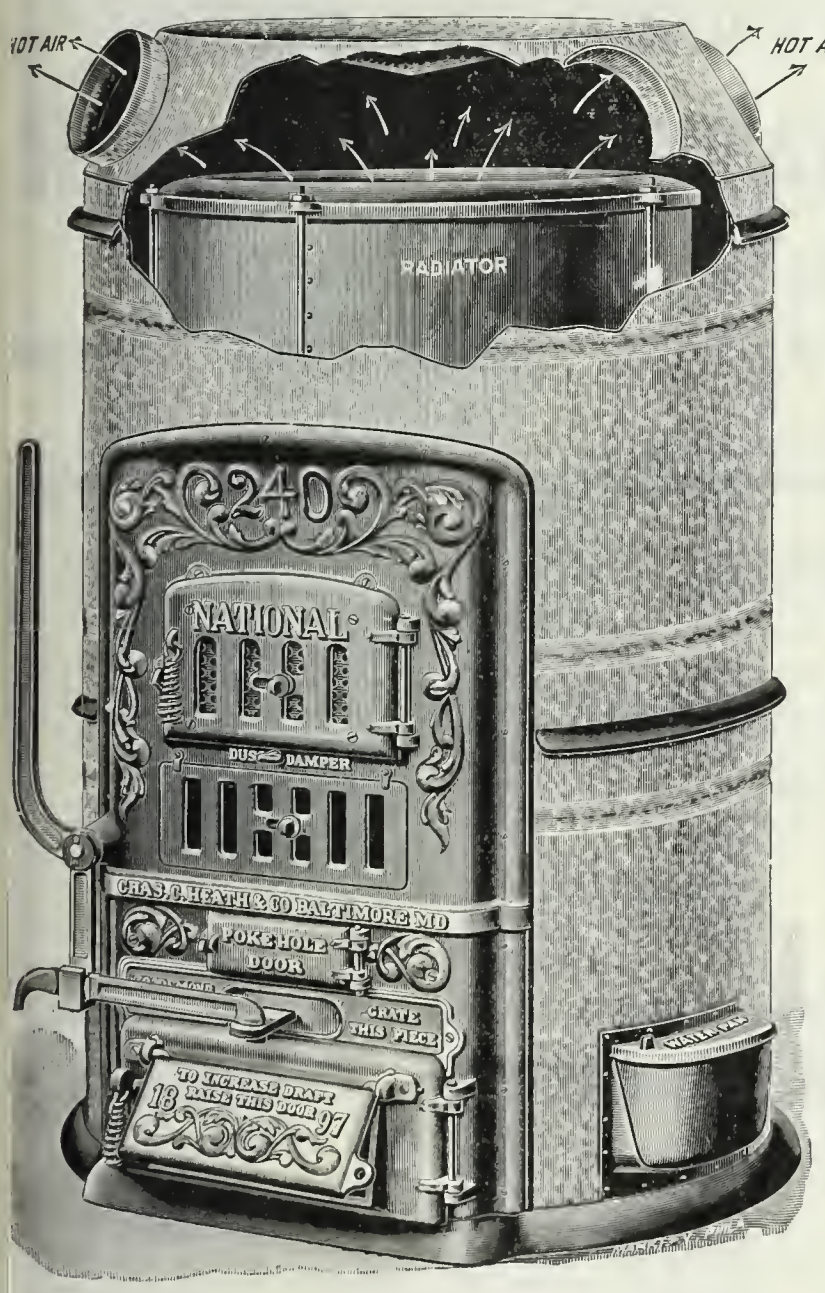
on heating apparatus denotes THE BEST. Secure absolute satisfaction by specifying and using them in your heating work. Capacities for all requirements.

Send for latest trade catalogue.

GURNEY HEATER MFG. CO.,

74 Franklin Street, BOSTON, MASS. 111 Fifth Ave., NEW YORK CITY.

Western Selling Agents, JAMES B. CLOW & SONS, 222-224 Lake St., Chicago, Ills.



A WORD IN REASON.

THE NATIONAL FURNACE

(200 Series)

HAS A GREAT REPUTATION.

IT IS A

WONDERFUL HEATER.

LOW IN PRICE.

DO NOT LET YOUR COMPETITOR GET THE AGENCY.

WRITE *TO-DAY* FOR BOOKLET.

CHAS. C. HEATH & CO.

BALTIMORE. PHILADELPHIA.

BRAND STOVE CO.

STOVES, RANGES and FURNACES.

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MILWAUKEE, WIS.

Royal Heaters

MANUFACTURED BY THE

HART & CROUSE Co.

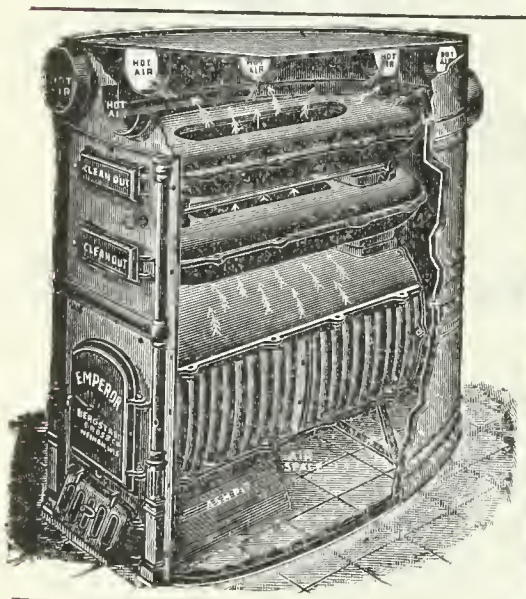
UTICA, N.Y.

ALL THE LEADING LINES OF

STEAM, HOT WATER & HOT AIR,

FOR HEATING ALL CLASSES OF BUILDING.

235 WATER ST., N.Y. BRANCHES. 79 LAKE ST., CHICAGO,
COLUMBUS, O. ST. LOUIS.



Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing.

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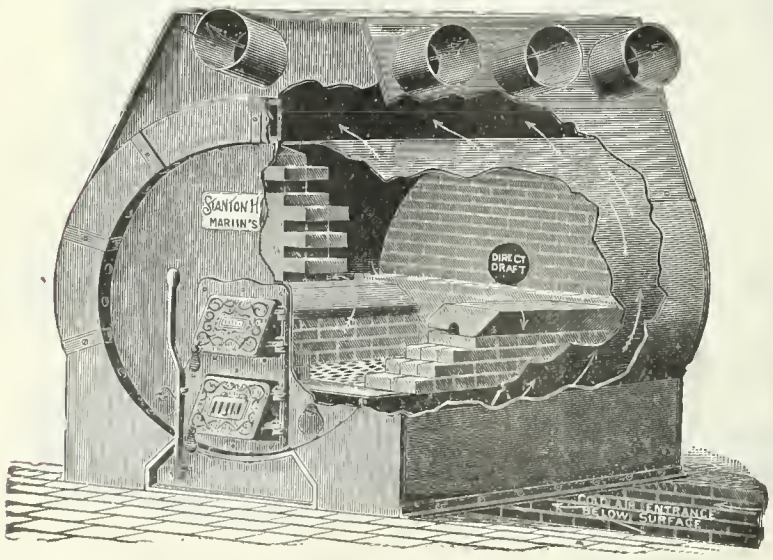
Bergstrom Bros Co.

NEENAH, WIS.

The Stanton Seamless Heater,

PORTABLE CASED.



LOUISVILLE, KY., Apl. 5th, 1901.

THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

Gentlemen:—Your favor of the 3d inst. is received asking our experience with the Stanton Heater which you put in for us during the fall of 1899. In reply we will say that it gives us pleasure to express our entire satisfaction with this Furnace. While we have had no severe weather this winter there have been several quite cold snaps, but our offices have been very comfortably heated, and our coal bill (Pittsburgh coal) has been quite moderate compared with other Heaters we have used.

The satisfaction the Heater has given us can be best expressed by saying that we have not heard the Furnace mentioned once this winter. You can see, therefore, that we have had absolutely no cause for complaint.

Yours very truly
ROBINSON-HUGHES & CO.

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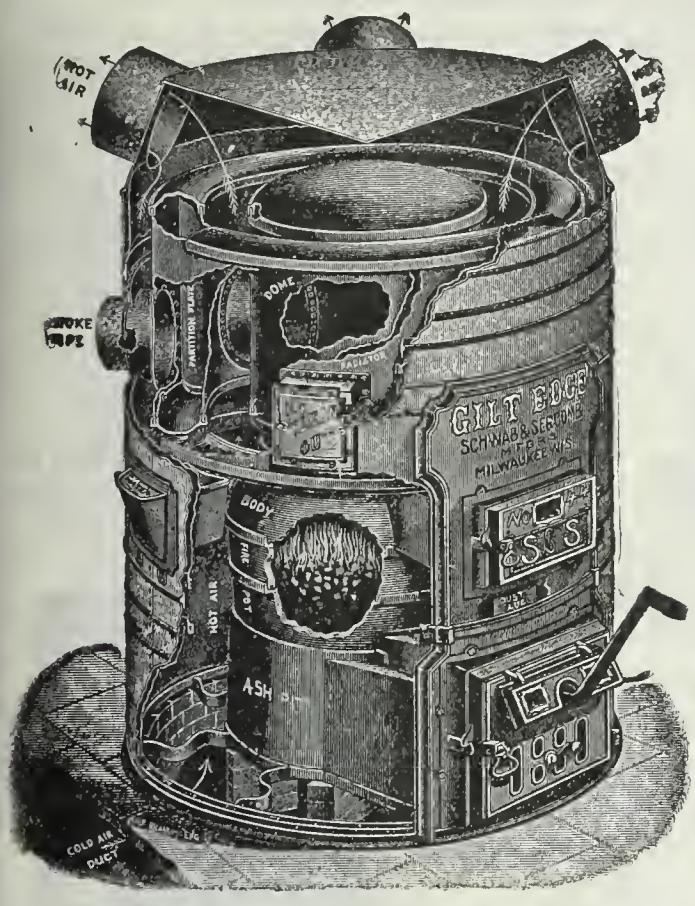
THE STANTON HEATER CO.,

Martin's Ferry, Ohio.

See our advertisement next week.



Gilt Edge Warm Air

AND

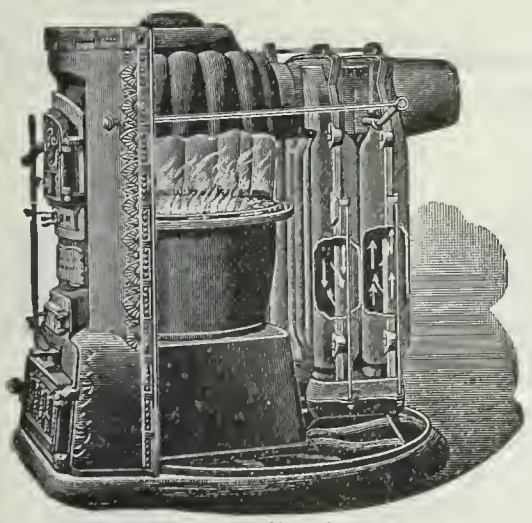
Combination Heaters

are leaders embodying points of furnace excellence possessed by no other furnaces. A large variety of sizes and styles, each especially adapted for a certain class of fuel. We are manufacturers of a complete line of warm air registers, safety pipe and tin galvanized iron furnace fittings.

R. J. Schwab & Sons Co.,

MILWAUKEE, WIS.

BENGAL FURNACES



YOU NEED THEM IN YOUR BUSINESS.

DON'T KICK If your delay in securing the Agency for these furnaces has enabled the other fellow to get it.

EASIEST TO SELL.
SURE TO PLEASE.
ALL CAST IRON.

Best and most popular furnaces made.
More radiating surface than any other furnaces their size.

BENGALS HEAT THE HOUSE—NOT THE CHIMNEY.

Secure a BENGAL AGENCY at once.

WRITE FOR CATALOGUE AND FULL PARTICULARS.

Eastern Selling Agents,
GURNEY & CO.,
Washington, Hanover & Elm Sts.,
Boston, Mass.

FLOYD, WELLS & CO.

ROYERSFORD, PA.

KEEP UP WITH THE PROCESSION.

CONTRACTORS USING OUR BOILERS

Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

If this interests you drop us a line and receive our NEW Catalogues and Prices.

KEWANEE BOILER COMPANY

Home Office and Factory,

Chicago Store, 169 Lake St.

KEWANEE, ILLINOIS.

HOT WATER AND HOT AIR

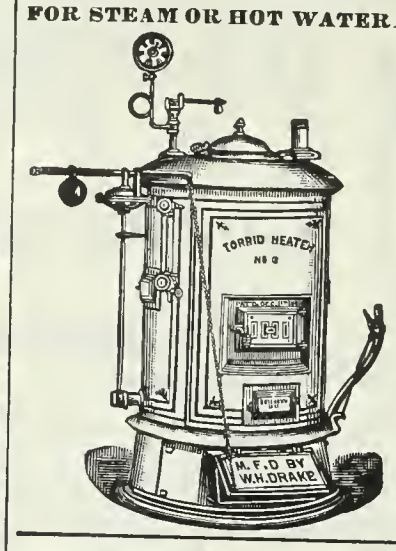
HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

Heat Water Quickly.
Circulation is Positive.
No Joints Inside to Leak.

THE NATIONAL PIPE BENDING CO
160 RIVER ST., NEW HAVEN, CONN.

"TORRID HEATER."
FOR STEAM OR HOT WATER.



It is Practical in Design.
It is Safe, Being Tested to 200 Pounds.
It is Easy to Manage and Keep Clean.
It is Durable.
It is Sectional and Easily Handled.
It has No Packed Joints.
It is Self-Feed or Surface Burning.
It has the Torrid Patent Rocking and Dumping Grate.
It is Low in Price.

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MANUFACTURED BY
W. H. DRAKE, No. 36 Clinton St., NEWARK, N. J.
Factory: Hackettstown, N. J.

KINEO FURNACES
FOR WOOD.

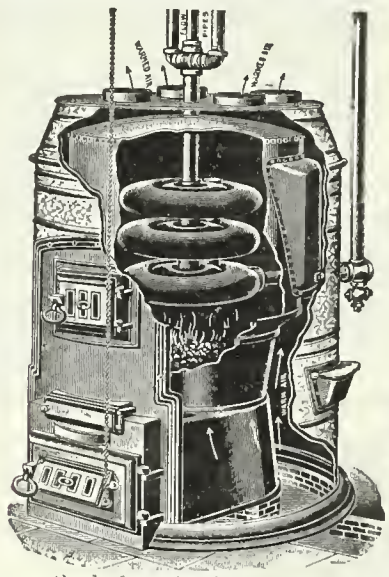
The Kineo Furnaces are built to secure durability and heating qualities. The smoke enters the radiators on the back and passes entirely around the radiator before entering the chimney, making them the most powerful heaters known. Also manufactured in two sizes with steel radiators.

SEND FOR CIRCULARS.

Noyes & Nutter Mfg. Co.,
BANGOR, MAINE.

The Champion
Hot Water Combination Boilers.

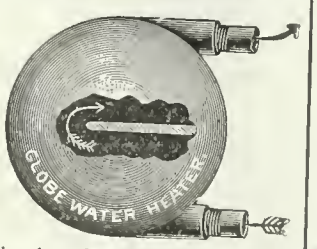
They Fit Any Furnace.



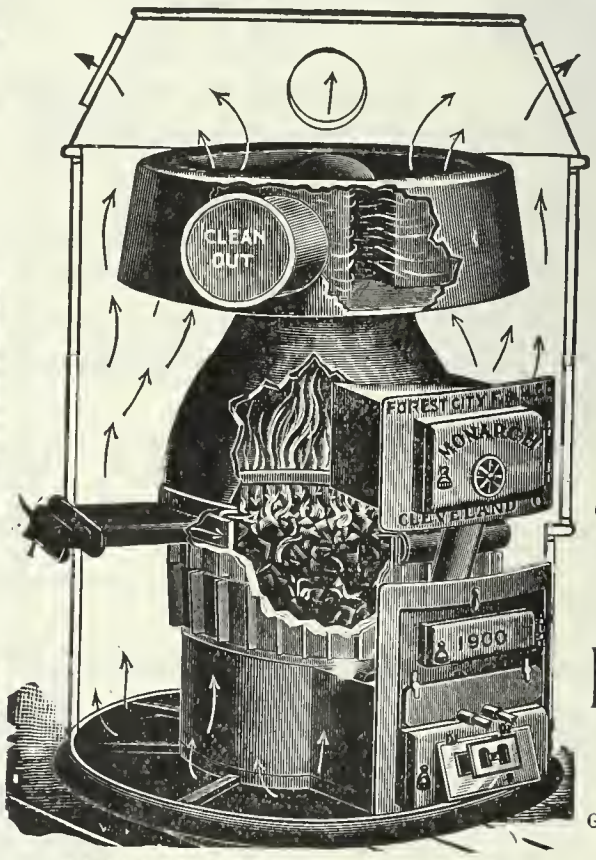
Showing one method of application.
These Boilers are made in three sizes diameter, and from 100 to 600 square feet radiation capacity.
Will heat those cold rooms, or an addition to the building. Will increase the capacity of any furnace. Are cheaper than coils and will do more work.

GLOBE WATER HEATER

Attached to any Furnace will heat water for domestic use.



Write for new circular. Manufactured by
FRANK D. STOLZ,
115 Lake St. - - Chicago, Ill.



MONARCH FURNACES.

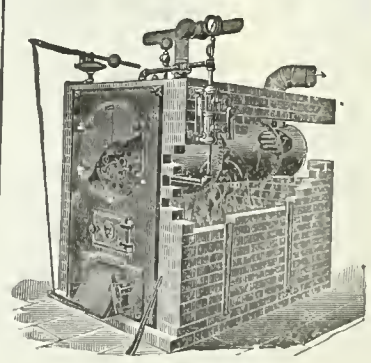
All Cast Iron. For Hard and Soft Coal. At Foundry Prices to Large Buyers.

Inquiries Solicited.

OUR NEW CATALOGUE JUST OUT.

The Forest City Foundry and Mfg. Co.
81 Elm Street,
CLEVELAND, OHIO.

Gray Iron Castings to order. High grade only.



Vance Boilers.

The most economical Steam and Hot Water Boiler on the market. Write for Catalogue and Price List.

VANCE BOILER WORKS,
373 Atkinson St., Geneva, N. Y.

Champion and Marquart

Double Flue Ranges.

Only Double Flue Ranges in the Market. The Greatest Fuel Saver. Draw-Out Grate.

Handsomely Finished Throughout. Prices Within Reach of all.

CHAMPION STEEL RANGE CO.,

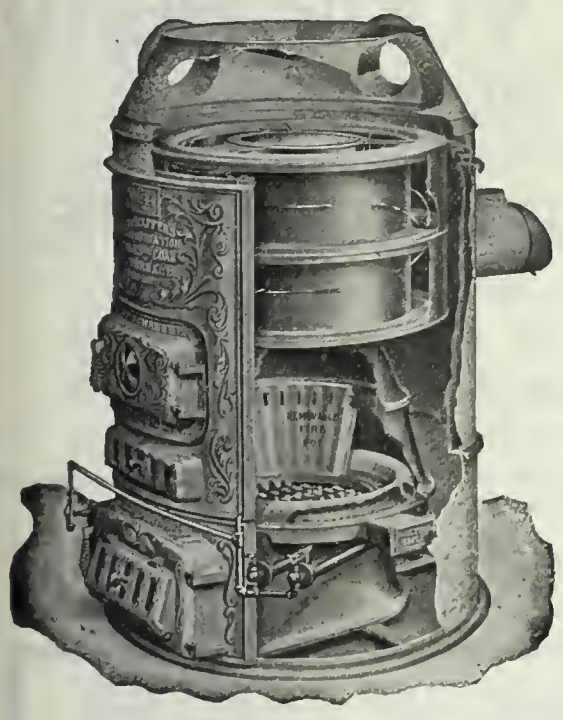
CLEVELAND, O.

We are represented by the following houses:

Lee-Glass-Andreesen Hdw. Co, Omaha, Neb.
James Graham & Son, San Francisco, Cal.
Richards & Conover Hdw. Co, Kansas City.
Michigan Distributing Co, Lansing, Mich.
Chicago Stove and Range Co., Chicago, Ill.
Jacob Retterer, Chicago, Ill.
Corbett, Failing and Robertson, Portland, Ore.
Palmer Hdw. Co., Savannah, Ga.

J. M. Litchfield, New York N. Y.
Kettlesen & Degetau, Chihuahua, Mex.
Moore-Bandley Hdw. Co., Birmingham, Ala.

Schaffer's Combination Gas and Coal Furnace.



The Most Economical and Durable Gas Furnace On the Market.

It will heat a house as cheaply with Gas as with Hard Coal, and is so arranged that the change from one fuel to the other can be made in a few minutes, without removing the burner or grate, or disconnecting the gas piping.

Absolutely No Condensation.

For Catalogue and Price List, write to

JOHN P. SCHAFFER.

18 WOOD ST.,

PITTSBURG, PA.

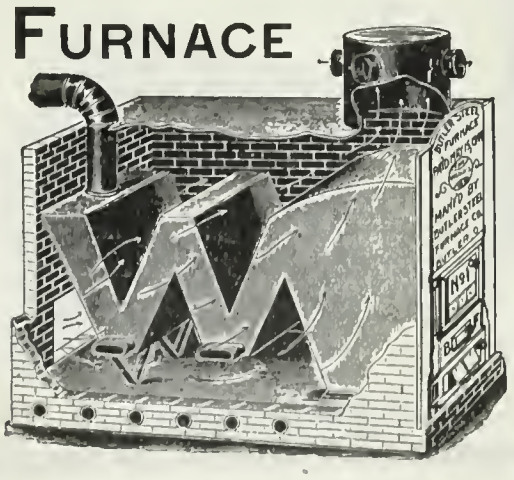
BUTLER STEEL FURNACE

The cheapest and best heating furnace on the market.

This furnace is a fuel saver and will not clog with soot.

You can burn slack, wood or any kind of soft coal.

For further information and prices write to



BUTLER STEEL FURNACE CO.,

Butler, Ohio.

Furnace Heating.

A Practical and Comprehensive Treatise on Warming Buildings with Hot Air, by William G. Snow, with an Appendix on Furnace Fittings. 170 pages; size, 6 x 9 inches. Cloth bound. Price, **$1.50.**

This is the only book that has been brought out which presents a systematic and reliable treatment of the warm air furnace system of heating.

It deals with the various types of furnaces, their construction, proper location and setting, together with furnace fittings, and all matters pertaining to the installation of furnaces and to effective and economical heating by warm air. The subject is discussed for the first time by a competent author possessed of a scientific education and a practical training, who presents positive rules, based on a long experience, for guidance in designing furnace systems for dwellings and other buildings where this popular method is employed. The various details of furnace work are described simply and at such length that the volume will be valuable to all who are in any way interested in the subject. It is recommended to practical furnacemen, to architects, builders and house owners, and to tinners and plumbers in suburban sections who do furnace work. To all these it will prove a reliable text-book and guide.

PARTIAL SUMMARY OF CONTENTS BY CHAPTERS.

Chapter I.—Furnaces—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

Chapter II.—House Heating—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

Chapter IV.—Air—Deals with the Necessity of Ventilation—Water Needed to Moisten Air—Expansion of Air—Velocity of Air in Tubes, etc.

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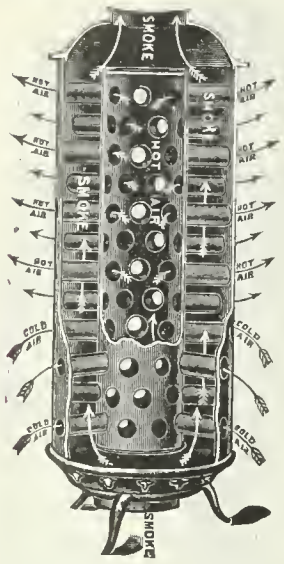

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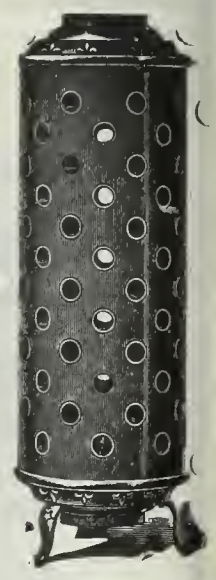

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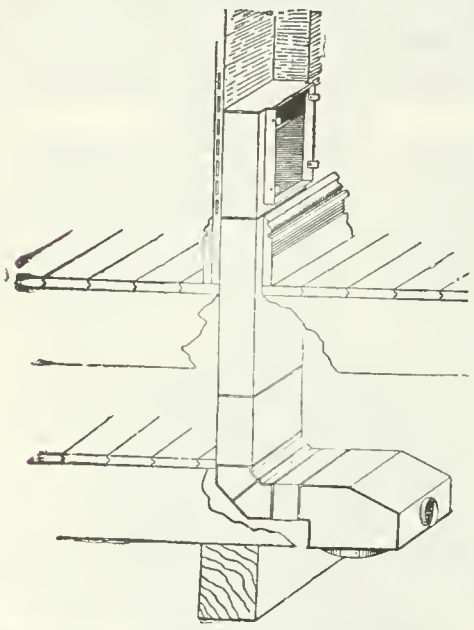

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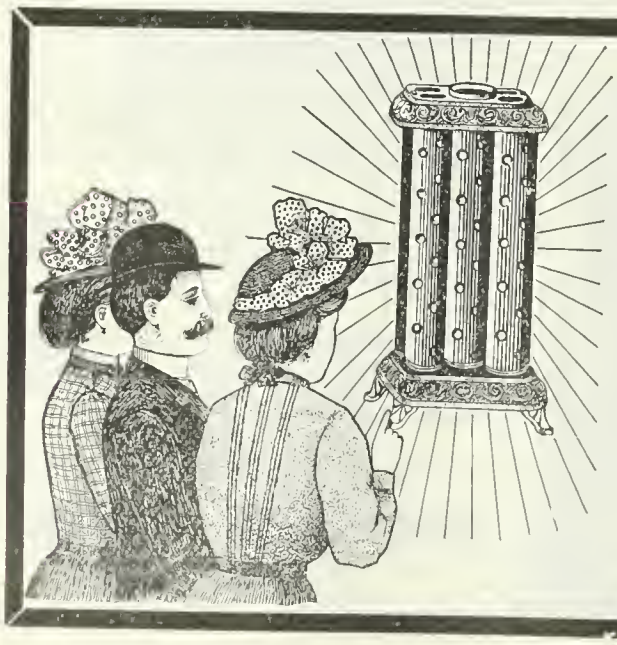

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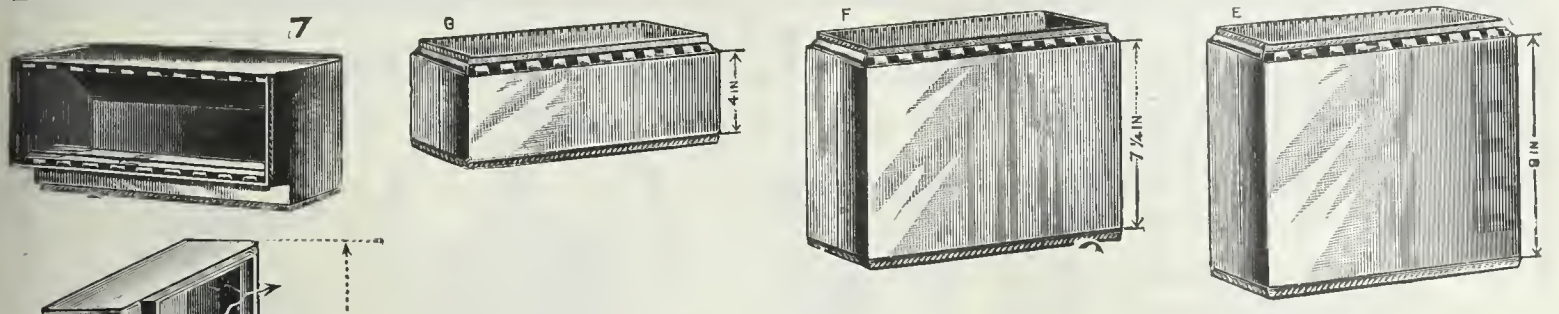

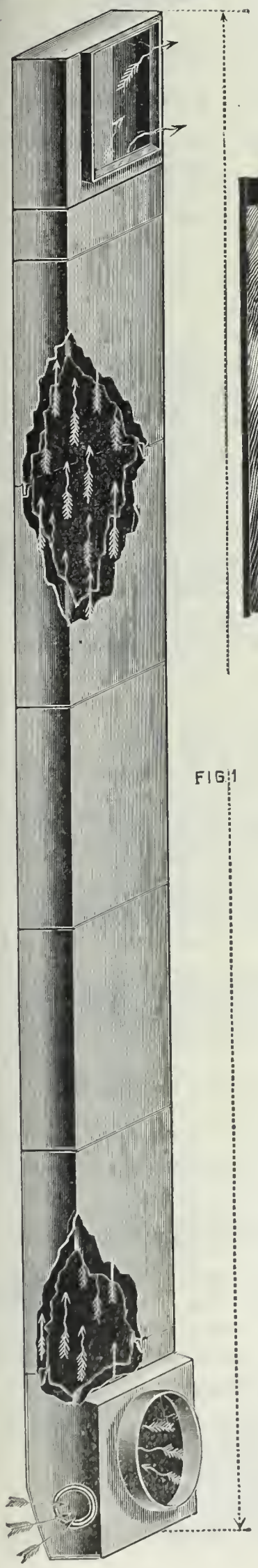

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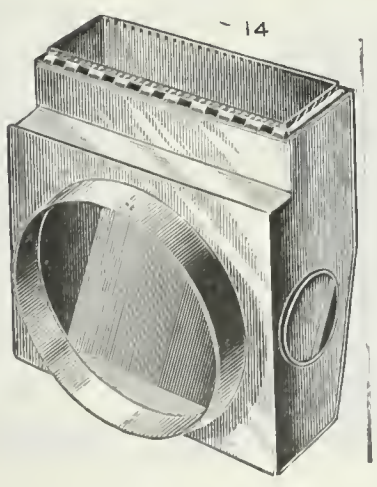

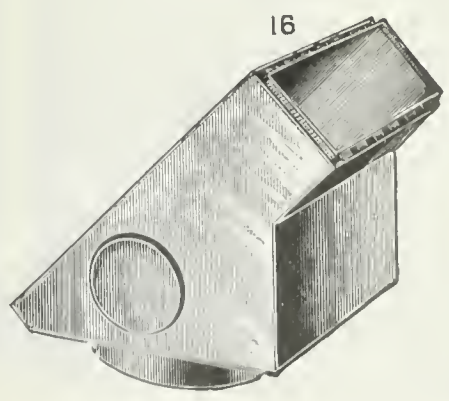

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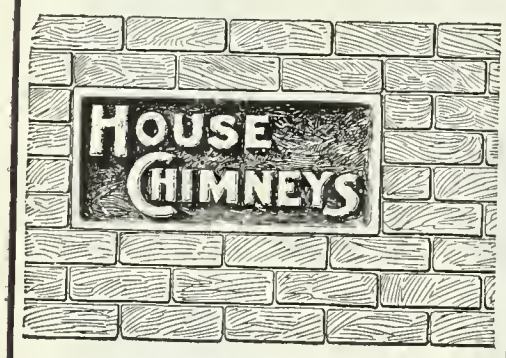

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SMOKE PIPE FOR WOOD FURNACES - - - - 48

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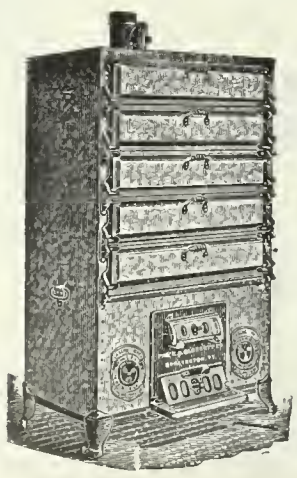

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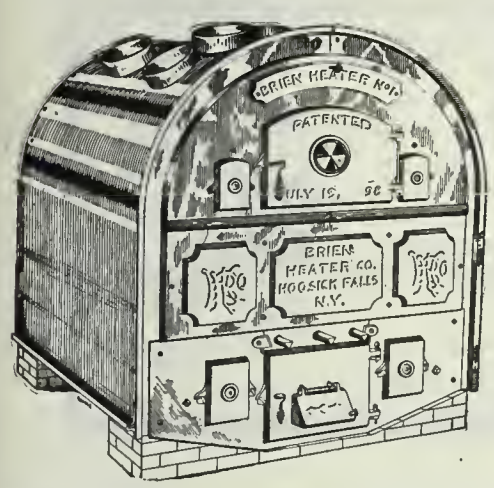

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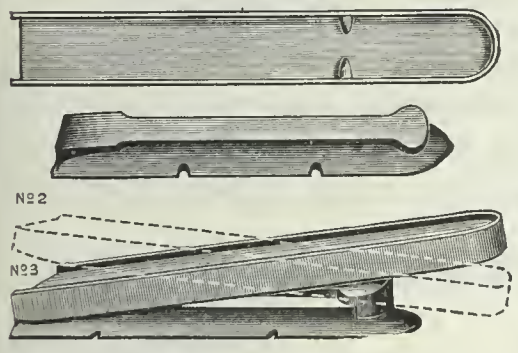

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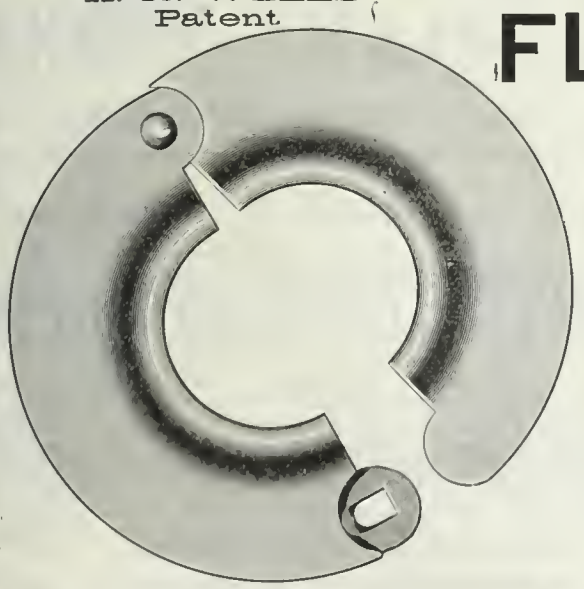

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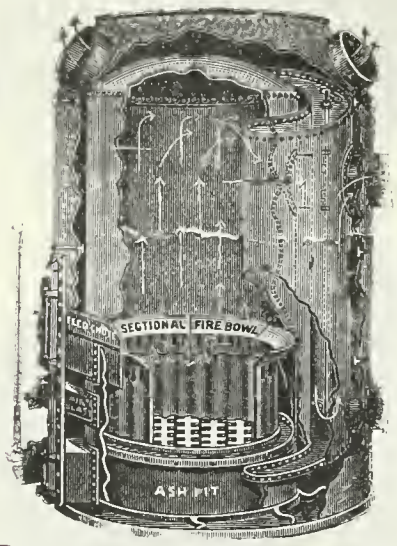

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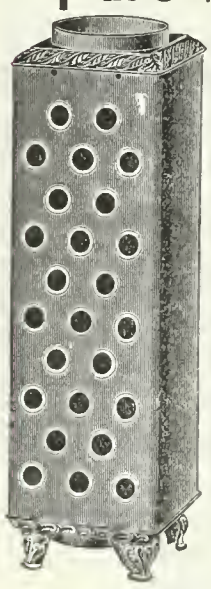

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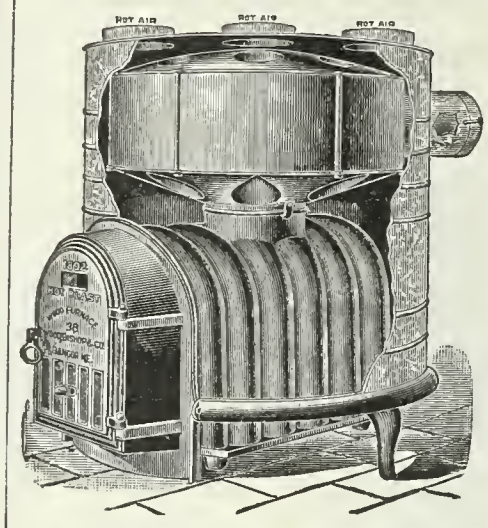

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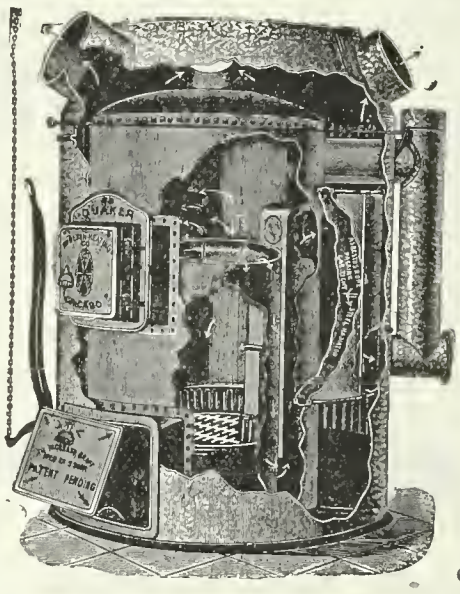

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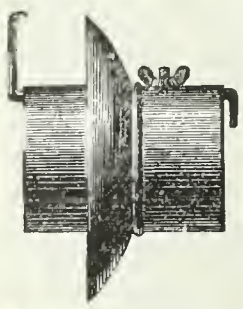

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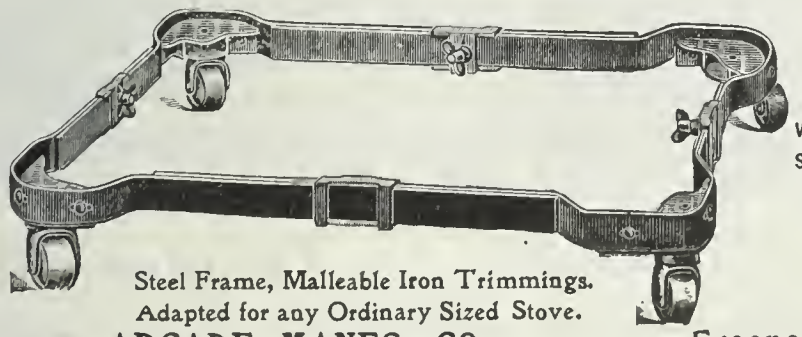

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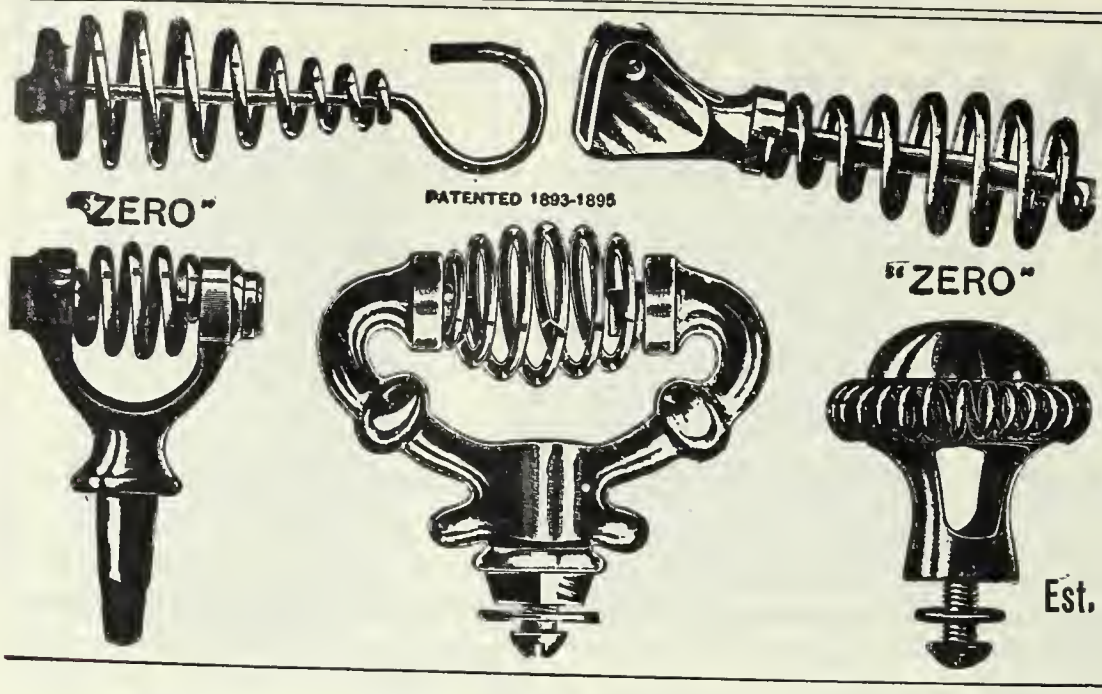

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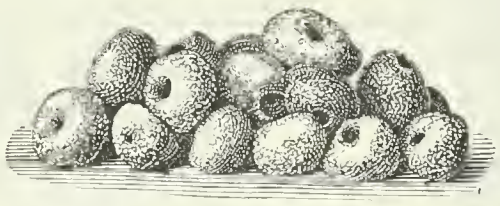

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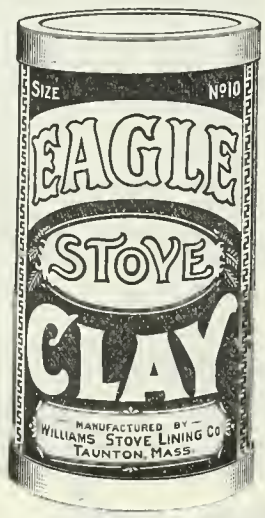

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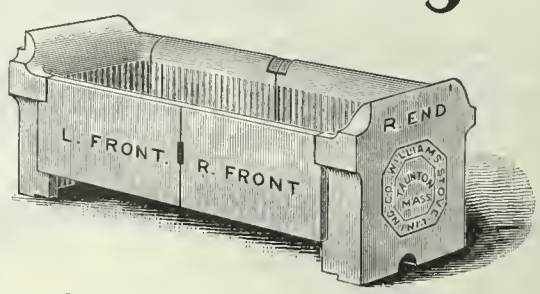

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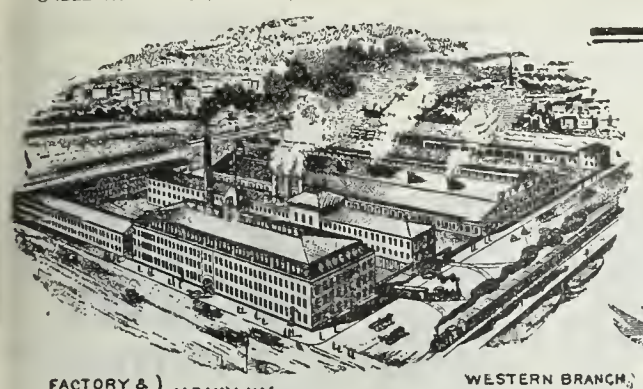
THE LAWRENCE-LETTS ELBOW CO., Ltd., - - Waverly, N. Y.

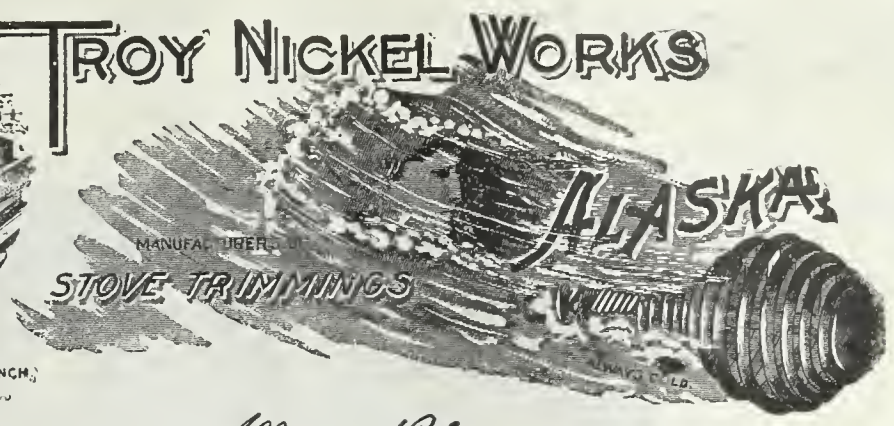
CABLE ADDRESS. (NICKEL.) LOCAL & LONG DISTANCE TELEPHONE NO. 162.



FACTORY & MAIN OFFICE } ALBANY, N.Y.

WESTERN BRANCH, CHICAGO, ILL.

TROY NICKEL WORKS



Albany, N.Y.

POKERS, LID LIFTERS,
KNOBS, HANDLES, and a full line of HARDWARE.

MARCY STOVE REPAIR CO.,

MANUFACTURERS OF

RANGE, STOVE AND HEATER REPAIRS

AND FIRE-BRICK LININGS,

74 Beekman Street, New York.

FOUNDRY,
Perth Amboy, N. J.

FIRE-BRICK FACTORY,
36 to 46 South Fourth Street, Brooklyn, L. I.

BRANCH STORES:
South Fourth Street, Brooklyn, L. I. 362 Grove Street, Jersey City, N. J.

CATALOGUES NOW READY.

STOVE REPAIRS
WATER FRONTS

AND EVERYTHING FOR THE TIN SHOP

We can serve you better than anyone else. WHY? Because we have the stock on hand.
Repairs for 20,000 different stoves and furnaces

WRITE FOR CATALOGUE. **H. E. HESSLER CO., Syracuse, N. Y.**

M. D. VALENTINE & BRO. CO.

FIRE BRICK

CUPOLA LININGS A SPECIALTY.

WOODBRIDGE. N. J.

OUR facilities enable us to carry constantly on hand the largest stock in this country. This assures immediate shipment on receipt of order.

THE

PRESBREY STOVE LINING

Will not clinker and will last longer than any other.

SEND FOR NEW CATALOGUE.

PRESBREY STOVE LINING CO., Taunton, Mass.

AMERICAN SEAL

Elastic Oil Roofing Cement, Stove Putty,
Asbestos, Furnace Cement and Roofing Paint.

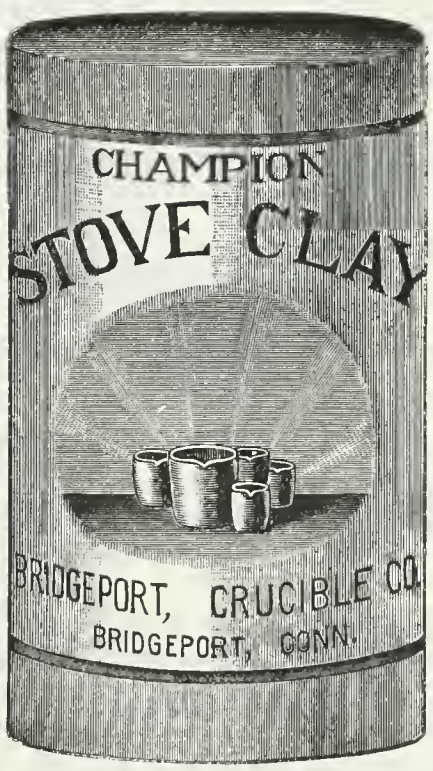
WRITE FOR PRICES.

J. L. PERKINS & CO., Western Agents, 241 Lake St., Chicago.

HANDLE THE BEST.

CHAMPION STOVE CLAY

Is the only brand made of crucible materials, viz.: Imported German Fire Clay and Plumbago from Ceylon.



Dealers are invited to send for circulars.

Packed in neat, attractive, round pasteboard boxes of three sizes: large, medium and small, holding about 10 lbs, 6 lbs. and 2½ lbs., respectively.

ALSO SOLD IN BULK.

Your jobber can furnish the goods.

BRIDGEPORT CRUCIBLE CO.
Bridgeport, Conn.

Largest and Best Stock. Special Stock of Water Fronts, Thoroughly Fitted and Tested.

WATER FRONTS

WATER FRONTS

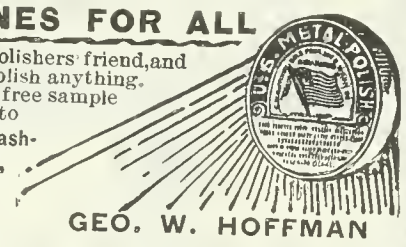
THE S. M. HOWES CO.,
40-42-44-46 Union St., Boston. Factory, Charlestown.

Duplicate Postals, Order Blanks, Stamped Envelopes, Catalogues furnished upon application.

SHINES FOR ALL

It is the polishers' friend, and will polish anything. Write for free sample to

297 E. Washington St., Ind'p'l's, Ind.



GEO. W. HOFFMAN

STOVE REPAIRS.

Stove dealers' SUPPLIES of all kinds.

Water Fronts a Specialty.

WE GUARANTEE PROMPTNESS IN FILLING ORDERS

Catalogues, Order-Books, Postals or Envelopes sent upon application.

Largest Jobbers in New England.

HENRY N. CLARK CO.,

56 and 58 Union St.,

BOSTON, MASS.

THE GEORGE W. COPE Stove Pattern Works.

ORIGINAL, ARTISTIC AND PRACTICAL CONSTRUCTION.

Cor. Randolph and Atwater Sts.,
DETROIT, : : MICH

WE SELL ONLY

STOVE REPAIRS, FIRE BRICK, WATER FRONTS.

SEND US YOUR ORDERS.

O. G. & D. H. DONALDSON,

50 So. Division St., BUFFALO, N. Y.

REPAIRS

FOR ALL

STOVES AND RANGES

M. BRUCKER,

Wholesale and Retail

325-331 N. LINCOLN ST., - - - CHICAGO, ILL.

To Stove Dealers

NOTICE.

Do you know that the new A-B dealers' stove polish is made dry and you can thin it as you wish. It is the cheapest, brightest and easiest polish to use—no dust—no rust—waterproof. Keeps in any climate. Put up in 5 lb boxes—Patented. No tin cans to pay for. Mixes quicker than paste; no drying up, good always. Used by a great many stove manufacturers who are sending duplicate orders. **Sample mailed Free.** Send for price list, it will save you money.

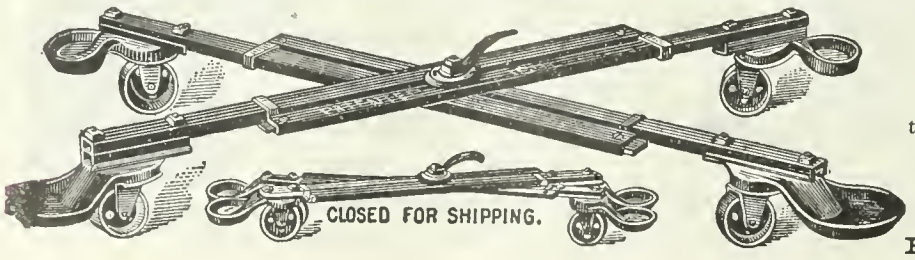
AYLING BROS.,

Sole Manufacturers and Patentees of A-B Stove Polish.

Office and Works, 14 Haddon Ave.,

Address Department B CHICAGO, ILL.

The Model Stove Truck is out of sight when under a stove.



Is all steel, has only one adjustment, is practically indestructible.

We offer to take back and refund money if, after a month's trial, the Model is not satisfactory.

SEND FOR CIRCULAR AND PRICE.

The S. M. HOWES COMPANY,

BOSTON, - - - MASS.

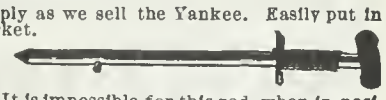
Sizes: 6, 7, 8, 8½, 9, 10, 10½, 11, 12, 12½, 14 and 15.

The YANKEE Hot Air DAMPER (Improved All Steel)

THE YANKEE EXCELS.

Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

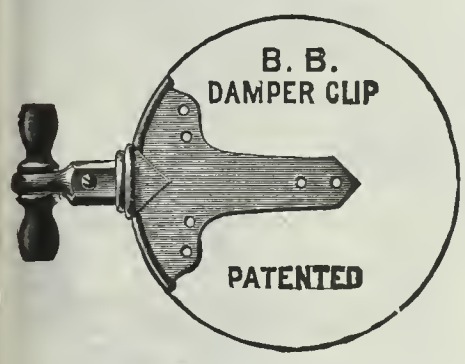
ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod Same size of holes are punched on each side of pipe Rod is made of ¼ inch cold-rolled steel and slips into damper very smoothly. **Sample sent to any Dealer without charge.**



It is impossible for this rod, when in position, to move either way.

The S. M. HOWES CO., Manufacturers, 40-46 UNION ST., **Boston, Mass.**

NEW YORK: A. L. Canfield, 284-286 Pearl St. CHICAGO: Excelsior Steel Furnace Co.



The B. B. Patent DAMPER CLIP

To remove Handle, simply loosen Nut *half way*—unnecessary to remove Bolt.

BEST AND CHEAPEST.

Send for Sample and be convinced.

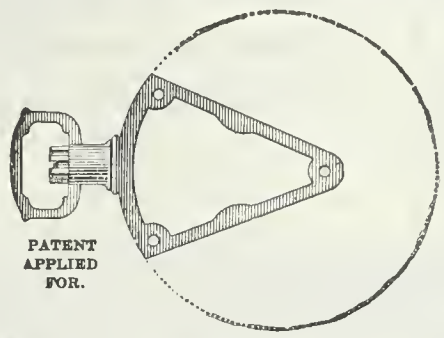
All kinds of Dampers—Plain, Uncle Sam American and others always in stock.

Send for catalog.

BERGER BROS. CO.,

Tinners' Hardware and Roofers' Supplies, PHILADELPHIA.

THE MALLEABLE IRON DAMPER CLIP.

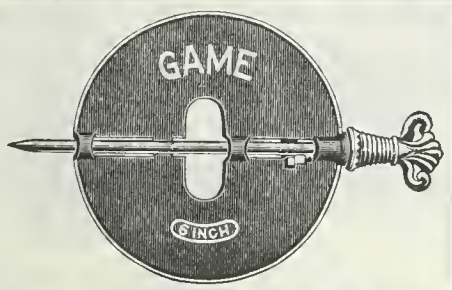


EASILY ADJUSTED AND INDESTRUCTIBLE

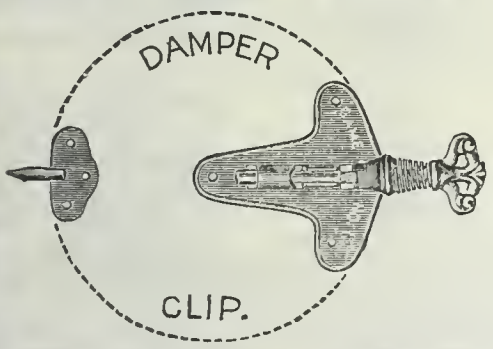
WRITE FOR PRICES.

THE BROHARD CO., - Phila., Pa.

Game Stove Pipe Dampers and Clips.



The TAYLOR & BOGGIS FOUNDRY CO., Cleveland, O.

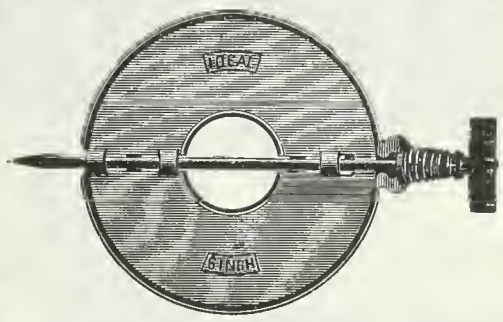


LIGHT GRAY IRON CASTINGS.

Builders' Hardware, Oil and Gas Stoves.

Japanners and Electroplaters.

IDEAL DAMPERS, COVER LIFTERS



AND POKERS

HAVE NON-HEATING HANDLES OF ELEGANT DESIGN AND FINISH. THEY ARE THE BEST.

STOVER MFG. CO.,

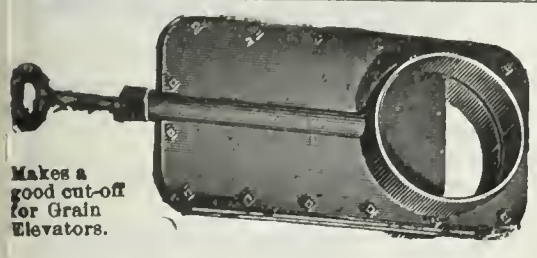
164 RIVER ST.,

FREEPORT, ILLS.

THE merchant who does not know the value of **Original Stove Repairs** over the common kind is not all right; he is only half right. We shall be glad to put him right in line with thousands of others who are next to a good thing. **Original** order book free with first shipment. Most complete ever issued.

UNION STOVE REPAIR CO.,

2854 Archer Avenue, Chicago.



Makes a good cut-off for Grain Elevators.

IMPROVED WIND-GATE

SEND FOR PRICE-LIST AND DISCOUNT TO

MINER & PECK MFG. CO.,

NEW HAVEN CONN.

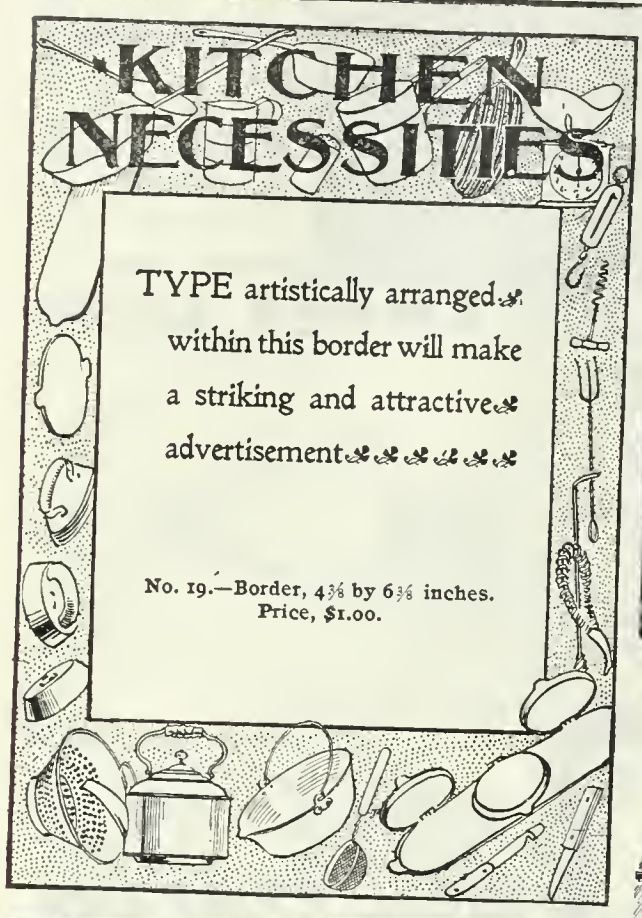
Why not re model your Oaks and Oval air-tights so as to use cast iron where you now use sheet steel? More attractive!

Planished and Sheet Steel will be scarce

THE GOBEILLE PATTERN CO.,
Cleveland, Ohio.

ADVERTISING CUTS

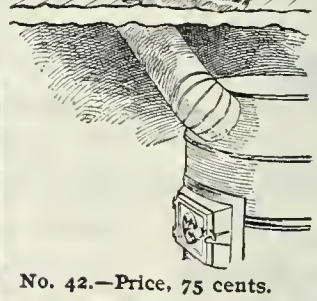
The cuts illustrated on this page will be useful to Furnacemen, Plumbers, Stove Dealers and House Furnishers, for newspaper or circular advertising, letter heads, &c. ***The cuts are shown reduced to 3-5 actual size.***


KITCHEN NECESSITIES
TYPE artistically arranged within this border will make a striking and attractive advertisement

No. 19.—Border, 4⅜ by 6⅜ inches. Price, $1.00.

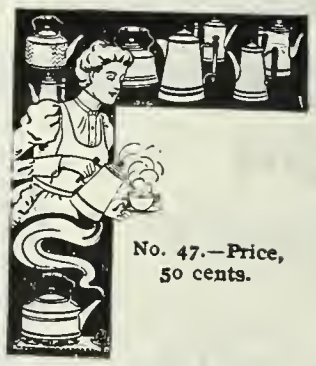
No. 33.—Price, 50 cents.

No. 36.—Price, 50 cents.



No. 42.—Price, 75 cents.

No. 46.—Price, 50 cents.

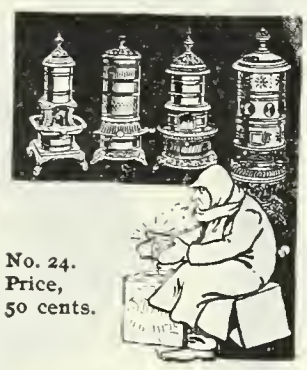


No. 47.—Price, 50 cents.

No. 39.—Price, 50 cents.

No. 61.—Price, 50 cents.

No. 15.—Price, 50 cents.



No. 24. Price, 50 cents.

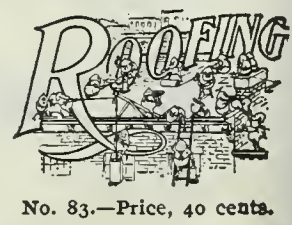
No. 41.—Price, 50 cents.

No. 48.—Price, 50 cents.

No. 78.—Price, 25 cents.

No. 20.—Price. 50 cents.

No. 30.—Price, 50 cents.



No. 83.—Price, 40 cents.

No. 45.—Price, 50 cents.

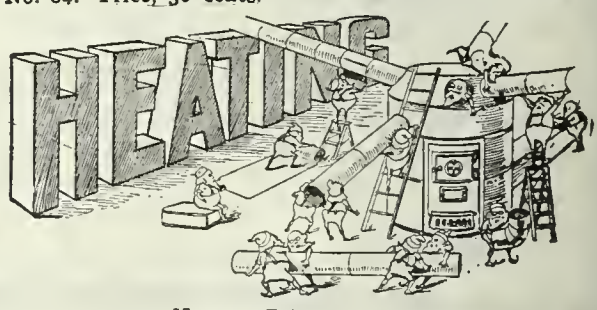
No. 84.—Price, 50 cents.

No. 81.—Price, 40 cents.

No. 29.—Price, 50 cents.

No. 32.—Price. 50 cents.

No. 44.—Price, 40 cents.



No. 75.—Price, 75 cents.

The Advertising Cuts illustrated above are reproduced 3-5 of the actual sizes.

Cuts Nos 81 and 83 are also sold in larger sizes—viz , No. 81, 4⅞ in. wide and 3 in. deep. price 75 cents, and No 83, 4 in. wide and 2½ in. deep. price 75 cents. We have numerous other cuts for advertising hardware, kitchen and household articles, cutlery, mechanics' tools, &c. These include cuts of various unique designs, together with a line of 128 cuts each giving a small, accurate illustration of a salable article.

A 16-Page illustrated circular and price-list of advertising cuts will be mailed on application.

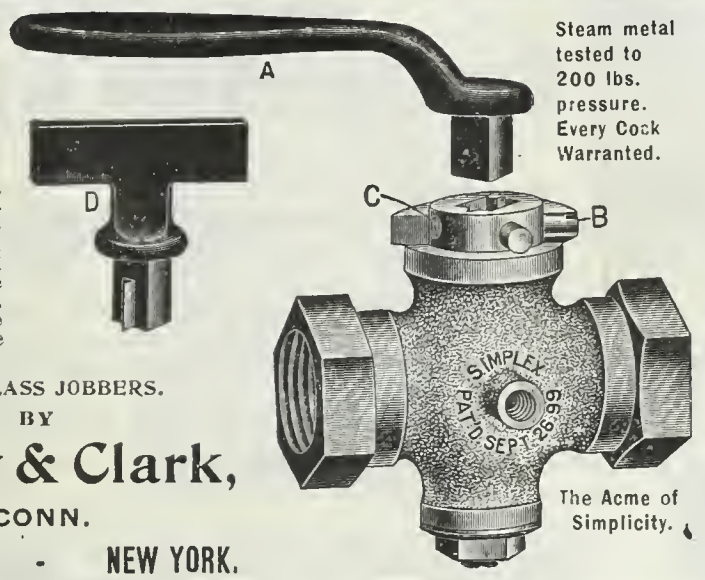
Sent prepaid by DAVID WILLIAMS COMPANY, 232-238 William Street, N. Y.

"Simplex"

Patented

Stop and Waste Cock

Practical plumbers know how difficult it is to reverse any of the cocks hitherto made, because they are so complicated. The "Simplex" can be changed from right to left hand instantly and CAN'T be set wrong. Interchangeable Lever. Tee Handle or Socket Head. To change from right to left or vice versa:—Take out set screw B. Reverse handle. Put set screw in hole C.



Steam metal tested to 200 lbs. pressure. Every Cock Warranted.

The Acme of Simplicity.

FOR SALE BY ALL FIRST-CLASS JOBBERS.

MANUFACTURED BY

Landers, Frary & Clark,

NEW BRITAIN, CONN.

Salesroom, 82 Chambers Street, - NEW YORK.

We Manufacture a Large and Well Assorted Line of

Compression Bibbs,
Basin and Bath Cocks,
Ground Key Lever Handle Bibbs,
Beer, Ale and Liquor Cocks,
Champagne Taps, Racking Cocks,
Cooler, Refrigerator and Can Cocks,
Bottling and Lock Cocks,
Kerosene Oil and Petroleum Faucets.
Fairy Hose Nozzles, Crown Water Filters, Towel Racks, Etc.

NICKEL PLATING OUTFITS.

ZUCKER & LEVETT & LOEB CO.

526 TO 530 WEST 25TH ST

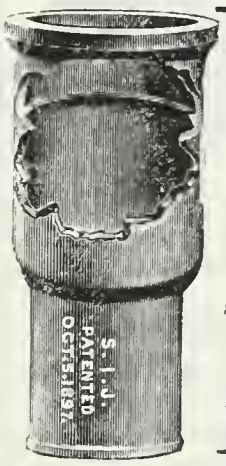
NEW YORK, U. S. A.

SEND FOR CATALOGUE OF NICKEL & ELECTRO-PLATING SUPPLIES & POLISHING MATERIALS.

DIXON'S Brazing Graphite

Prevents the brass from running over and sticking to the metal. Used and recommended by bicycle makers and repairers and others. Send for sample and price.

JOSEPH DIXON CRUCIBLE CO. - JERSEY CITY, N. J.



SISSON

INSERTABLE

JOINT

FOR SOIL PIPE.

Sizes, 2 to 6 inches.
Light and Heavy.
Saves labor, expense, and makes a neat job.
SEND FOR CIRCULAR.

R. Estabrook's Sons,
1st St., Boston, Mass.

PIONEERS LEADERS

LOW SPEED DYNAMOS.
NICKEL ANODES.
LACQUERS.

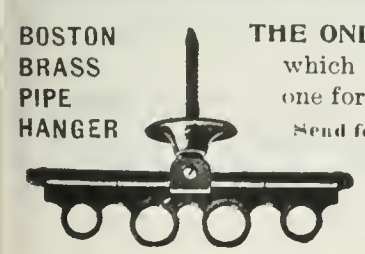
NICKEL PLATING OUTFITS

BUFFS.
CYANIDE POTASH.
TURKISH EMERY.
POLISHING MACHINERY.

THE HANSON & VAN WINKLE CO.

NEWARK CHICAGO NEW YORK

BOSTON BRASS PIPE HANGER



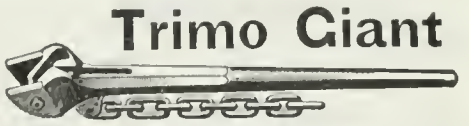
THE ONLY ONE which requires but one form of holder

Send for Circular.

JOSEPH H. YOUNG.

Boston, Mass.

Trimo Giant



This Chain Pipe Wrench

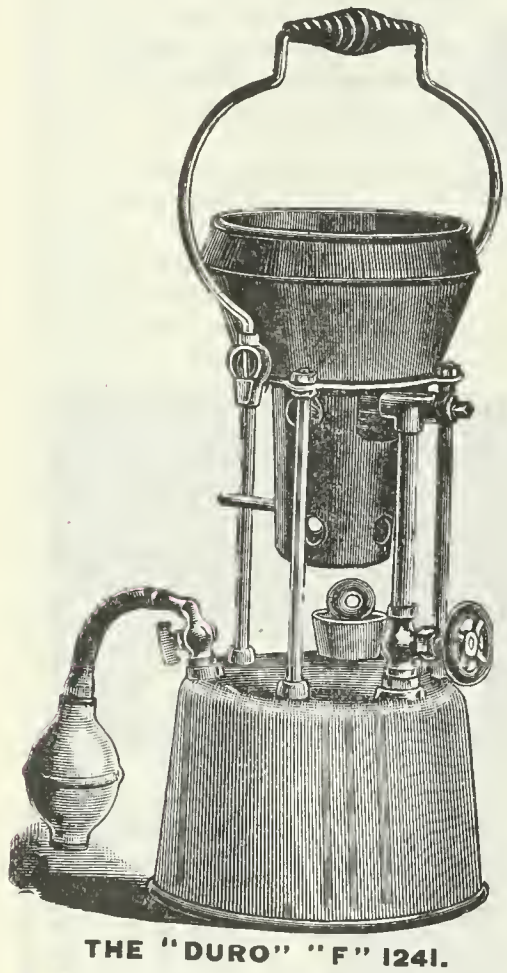
has interchangeable jaws. Improved method of holding and releasing chain. No locking. Send for catalog.

TRIMONT MFG. CO., Roxbury, Mass., U.S.A.

L. WOLFF
Manufacturing Company,

General Office,
93 W. Lake Street, CHICAGO.

WOLFF'S IMPROVED PLUMBERS' FURNACE,
The "DURO."



THE "DURO" "F" 1241.

PRICES UPON APPLICATION.

Quantity shipments are packed in cases 6 and 12 furnaces each.

The "DURO" Plumbers' Furnace

Has Drawn Steel Reservoir
Heavily Galvanized.

Drawn Steel Coil Cup.
Wrought Steel Bottom.
Patent Wire Handle.
Improved Filling Plug.
Safety Air Cock Joints.
No Cast-Iron Parts.

It weighs less than any other Furnace now in use.

In placing on the market

Our Improved Plumbers' Furnace

we have fully succeeded in producing ***the best furnace made.*** Most perfect in every detail. Of the highest efficiency. In operation, positive and reliable. Of substantial construction; combining lightness, strength and durability, at no more cost to the trade than the old style.

All component parts are interchangeable, being accurately made and fitted before shipment.

Illustrated Catalogue and Price-List sent upon application.

Hand Elevators and Dumbwaiters

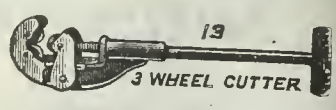
made to be sold by the Hardware trade. Can be placed in position by any carpenter, Catalogue free.

ENERGY ELEVATOR CO.,
410 Cherry St., Phila., Pa.

D. SAUNDERS' SONS

MANUFACTURERS OF PATENT

HAND



PIPE

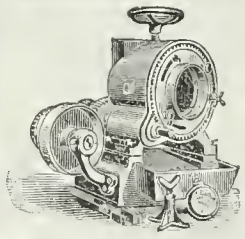
CUTTERS

In three styles. **One Wheel and Roller Cutter. Three Wheeled Cutter** and the **Tool Cutter,** for cutting **Brass, Copper** and Wrought Iron **Tubes.** Also mfrs. of **Pipe** Cutting and Threading **Machines** ¼ in. to 18 in., Hand or Power.

Send for Catalogue to

27 Atherton St., - Yonkers, N. Y.

FORBES PATENT DIE STOCK



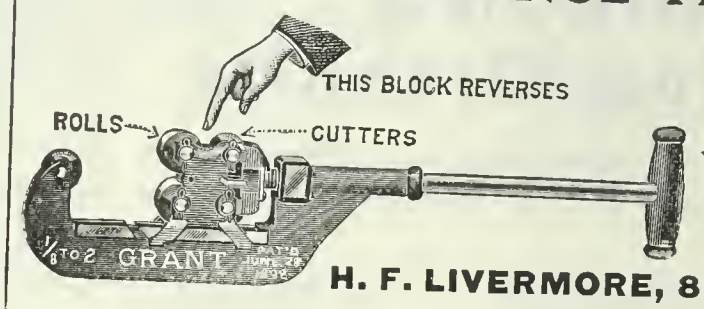
FOR HAND OR POWER.

Occupy less floor space, require less power to run, more simple of construction, far cheaper than any other machine of same range

Send for Illustrated Catalogue.

Manufactured by
THE CURTIS & CURTIS CO., 56 Garden Street, BRIDGEPORT, CONN.

THE GRANT CHANGE PIPE CUTTER.

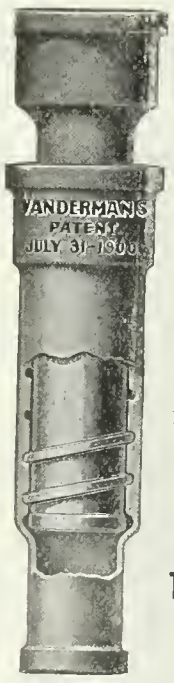


ONE IS ENOUGH TO CARRY.
CUTS FROM ⅛ TO 2 IN.

Cuts with 3 cutter wheels, or with 1 cutter wheel and 2 rolls.

Changes Instantly.
Strong, light and simple.
Nothing to get out of order.

H. F. LIVERMORE, 81 Pearl St., Boston.



VANDERMAN'S
Adjustable Fitting
FOR
Soil Pipe Connections.

MODEL FITTING
Sent on Application

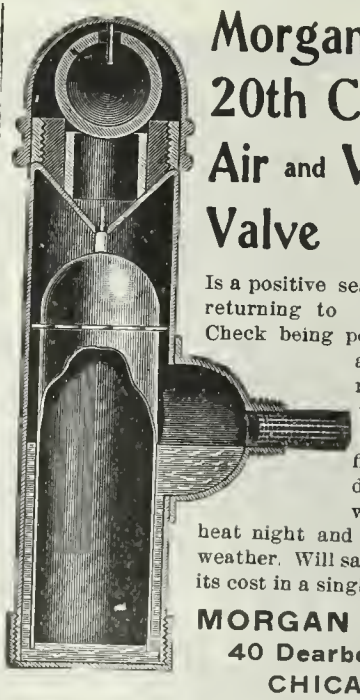
SEND FOR PRICE.

☞ Freight allowed on assorted lots of twelve East of Mississippi River.

Send for "A" Catalogue
Showing large line of

Plumbers' Specialties.

THE VANDERMAN PLUMBING & HEATING CO.,
WILLIMANTIC, CONN., U. S. A.



Morgan's 20th Century Air and Vacuum Valve

Is a positive seal against air returning to the radiator. Check being perpetually balanced in water requires no pressure to lift it. A banked fire, with drafts closed, will maintain heat night and day in mild weather. Will save four times its cost in a single season.

MORGAN & CO.,
40 Dearborn St.,
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Leather and Rubber WASHERS,

Machine cut, at less price than can be cut by hand. Send Sample for prices.

I. G. MARSTON & CO.,
200 Ruggles St., Boston, Mass.

COLWELL LEAD CO.,

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Manufacturers of

LEAD PIPE, SHEET LEAD, SHOT,

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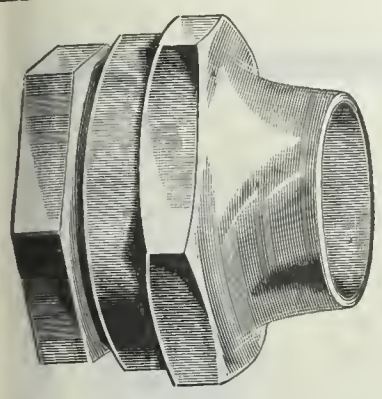
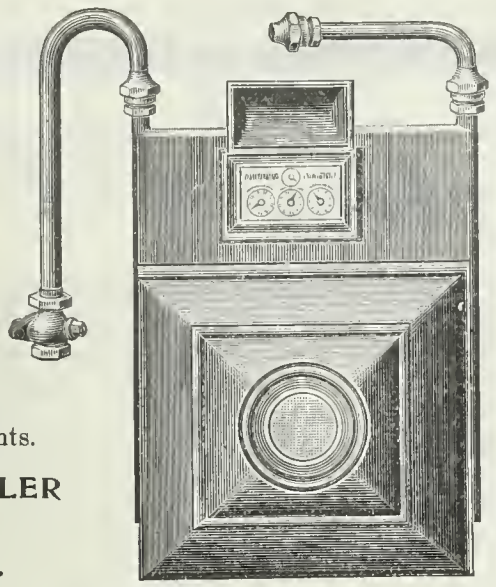
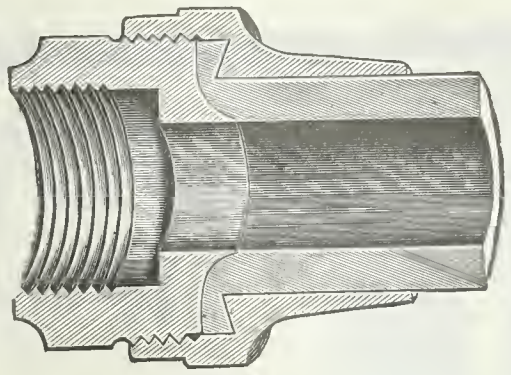
Everything You Want for Plumbing.







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A Perfect Substitute for Wiped Joints.

WATER BACK, FAUCET, BOILER COUPLINGS, ETC.

Send for Complete Catalogue.

All Gas Companies that use lead pipe, lead to lead or lead to iron, can save time and money by using the "NOVELTY FITTINGS" in setting their meters and for other purposes.

THE NEW HAVEN NOVELTY MACHINE CO., New Haven, Conn., U. S. A.

WHY YOU SHOULD USE A No. 5 FIRE POT.

$4.50 Net.

It is light, strong, and can be easily carried.
It produces a strong, blue flame which is intensely hot and free from smoke. The flame can be regulated as the user desires.
A kettle of metal and a pair of coppers may be heated at the same time.
The burner hangs on a swivel joint and can be pointed up or down.
The top section may be removed, exposing **the open fire, which can be used as a torch.** The flame then may be applied direct to the point where heat is desired. It is unequalled in thawing frozen pipes, taking soil pipes apart, making overhead or upright joints, flowing bath plugs, or any similar work.
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It requires but little gasoline to do a large amount of work and will save you its cost in the saving of gasoline alone in a short time. When you buy, get the best there is. If it bears our name it means your money back if you are not pleased.
Jobbers sell at factory price, or we ship direct on receipt of $4.50.

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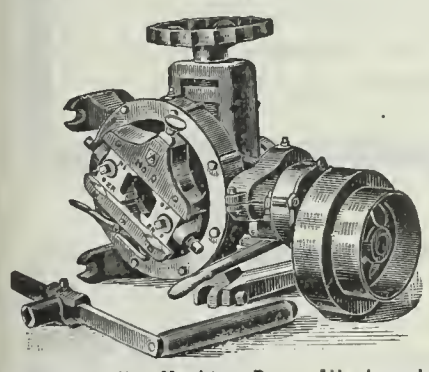
WE BUILD A SUPERIOR LINE



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and CUTTING OFF
MACHINES, (Hand or Power,)
STOCKS, DIES and other Tools
For
WATER, STEAM and GAS FITTERS.

—— CATALOGUE? ——

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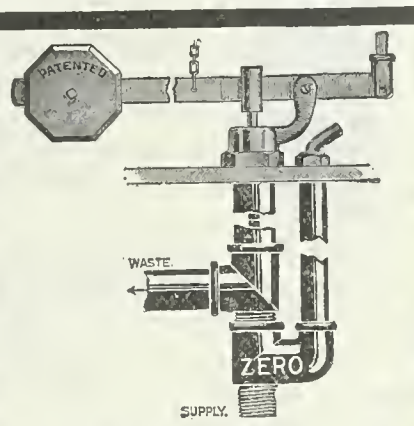

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The expense of installing closets by getting

Zero Anti-Freezing Valves.

They can be put in with half the time and half the labor because they do not require a pit or vault
They are simple and durable in construction—made without screws, springs or pins

Zero Valve & Brass Mfg. Co.,
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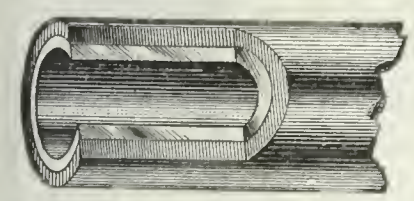
TIN LINED IRON PIPE.

LEAD LINED IRON PIPE.



This lining cannot be torn from the pipe.

Some of its uses are for

HOT WATER PIPE.
SERVICE PIPE.
CIRCULATION PIPE.
SUPPLY PIPE.

Ice Machines, Refrigerating, Bottling and Carbonating Condensers, Automatic Sprinkling System.

LAMB & RITCHIE, CAMBRIDGE, MASS., U. S. A.

The Climax Gas Machine and Gas Mixer produces a steady, brilliant, highly satisfactory gas, free from smoke, which burns through plain non-regulating or Welsbach burners.

It is a modern, perfected apparatus, warranted satisfactory and guaranteed unsurpassed in any particular. For completeness convenience and simplicity it has no equal. Sells to good trade who want the best and most desirable and will not submit to the objection of the old time machine, viz.: smoke and adjustable burners. Send for catalogue.

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BALL COCK

TRADE NEVRLEK MARK

Send for New Catalogue.

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12 Portland Street, - BOSTON, MASS.

GALVANIZED STEEL and WOOD TANKS.

All sizes and shapes.
J. H. EDWARDS,
59 Park Place, N. Y.

WATER SUPPLY BIG VOLUME LIFTS
L. E. RHODES CO.
HARTFORD, CT

The Kelsey Warm Air Generator

Study the construction of the Kelsey and the principle employed in warming the air, and you will be convinced of its efficiency.

In the Kelsey the air is warmed thoroughly and evenly by passing in separate channels through the cast iron sections.

There are from nine to seventeen of these sections in a Generator, according to its size.

Each section weighs about 70 pounds, and has 8 square feet of heating surface.

These immense surfaces and this great weight of cast iron, being in direct contact with and over the fire, are kept heated to any required degree, with a most economical consumption of fuel.

The Kelsey Method of Warming the Air Is the Best Method. ***Send for Booklet.***

Kelsey Furnace Co., Makers,

MAIN OFFICE,
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NEW YORK OFFICE,
239 Water St.

JAMES SMART MFG. CO,
Brockville, Ont.,
Sole Manufacturers for Canada.

COOK & VAN EVERA CO.,
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Western Selling Agents.

Brilliant Enameled Steel Ware

This ware is now manufactured by our factory at Bellaire in the Brown Color only, same having been discontinued in all colors by our Portland, Conn. factory. Particular effort is being made to turn out a highly satisfactory and pleasing article, and all dealers are requested to order a sample lot to be convinced of the merit of this ware.

White and White Enameled Steel Ware

This ware will also be made by our Bellaire Factory only hereafter having been discontinued by the Portland Factory. A large line of hospital goods made in this ware Recommended where sanitary qualities are essential.

National Enameling & Stamping Co.

BRANCH OFFICES New York Baltimore Chicago St. Louis Milwaukee ADDRESS OFFICE NEAREST YOUR LOCATION

THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, September 14, 1901.

DAVID WILLIAMS COMPANY, - - PUBLISHERS.

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Volume LVI.....No. 11
Index to Reading Matter.....Page 67

The Shop and Business Management.

Personal supervision over shop and salesroom, direct oversight of outside work, and general management of the office, are the usual duties devolving on proprietors of plumbing and sheet metal working shops, of whom the great majority are graduates of the shop and not of the office. They frequently and justly pride themselves on their skill and proficiency in their handicraft and their ability to supervise the work of their employees, and years of apprenticeship and training have taught them the necessity of watching with care the most minute details of workmanship. It is thus not surprising that there is often a disposition to give closer attention to the practical work of the shop than to the business management. The training of many proprietors of successful shops, so far as a knowledge of business is concerned, is, on the other hand, limited and imperfect, and has been only casually and very gradually acquired. It thus contrasts unfavorably with the exact, systematic and painstaking methods which are characteristic of enterprising and successful men in other branches of trade.

Had as many years been spent in store and office in constant touch with customers and commercial men as were spent in the shop, and in immediate contact with its work, the proprietor would doubtless recognize more adequately the importance of good business management, and give closer attention to the work of the office in buying goods and supplies, keeping accounts, cultivating trade, and in other ways contributing to the success of the enterprise.

It is not necessary to make any comparison as to the relative importance of the mechanical and the business side of a plumbing and metal working shop. There is opportunity for the best and most up to date methods in connection with its work. This will contribute directly and largely to its success. But at the same time there is danger that an engrossing attention to the mechanical part of the buisness may result in neglect of the equally important work of the office, with the result that the skill and enterprise in the shop will be handicapped by lax and shiftless methods in the office, to the serious detriment of the best interests of the business as a whole.

Skill in Labor.

It is only natural that there are wide differences of opinion as to the time and effort needed to acquire skill in any branch of labor. Generally speaking, exaggerated opinions prevail, one reason being that tradition keeps alive past experience before perfected machinery intervened. An experiment made by a leading sheet manufacturer is particularly interesting at this time of trouble in the rolling mill. Some time since a likely young man applied for work at a sheet mill. He proved to be a young American, who had found that teaching in a country school held out too little promise for the future. He was willing to and did begin as a common laborer. The general manager, however, issued orders that he be advanced from post to post as soon as he had acquired the skill to do justice to the work in hand. He was close watched, and in eleven months after leaving the ranks of common labor the man was put in charge of a sheet train as roller, which secured to him wages averaging from $8 to $10 per day. This, of course, was a record performance made by an intelligent, ambitious and physically well equipped man. We are told, however, that two years is no unusual period for good men to acquire the skill and experience to fit them for rolling sheets in a modern mill. Yet the impression does prevail even in very well informed circles that nothing but many years of slow advancement will qualify a man for the responsible work of a sheet roller. An occurrence like a strike is apt to have other effects besides that of dispelling the idea of rapidly acquiring skill, conspicuous among which is the impetus which it gives to improvement in machinery. Every manufacturer must be aroused to the necessity of making himself more and more independent of skilled and highly paid labor, particularly when it assumes the attitude, collectively, of such a body as the Amalgamated Association. We believe that the plans for developing continuous rolling and for the introduction of such methods as the Norton process of sheet rolling will be more energeticaly pushed in the future than they would have been had peace prevailed.

The Strike.

Manufacturers as the employers of labor have been watching the course of the steel strike with more solicitude and care than the general public or even the commercial classes. It has affected many of them more or less directly in its influence on the market for the raw material, but is at least equally interesting from its bearing on the relations between employers and their workmen.

From the very outset of the strike there has been little doubt in the minds of informed observers as to its outcome. The questions remaining are merely as to the extent of the defeat of the Amalgamated Association and the terms of settlement. Unless all signs fail, this strike has marked a new phase in the history of organized labor. Despite the popular outcry against trusts, general sympathy is unmistakably arrayed on the side of the United States Steel Corporation. Sober minded and conservative men have reached the conclusion that whatever may be the right of labor to organize, the right of the individual to work must be paramount to every other consideration. It is a hopeful sign when even a political convention declares that while in favor of organized labor it is still more in favor of law and order. Unfortunately for the Amalgamated Association,

it has learned little from its past defeats and its numerous mistakes, so that it typifies that radical element in union labor which seeks to enforce its views by intimidation. Fortunately there remain a vast number of labor organizations who do not thrust themselves into public prominence with strikes and broken contracts, but whose ways are rather those of peace and conciliation. To those to whom organized labor is more than a passing phase there comes the hope that the acute phase of the trouble is slowly passing away, to be replaced by a quieter and more orderly course.

The cry for arbitration in this strike has been much less strenuous and insistent tnan usual, for the conviction is slowly growing that what was once exploited in the daily press as a panacea for all labor troubles is but a poor dependence in cases of serious differences. It is difficult to apply it in the first instance, since it cannot be made compulsory, and it is usually accompanied by the illogical suggestion of selecting as arbitrators some prominent men noted for their character and probity, but entirely ignorant of the complex relations of employer and employee, and entirely unfitted either by training or experience to pass upon the business questions involved.

One of the most interesting results of the strike has been the greatly strengthened position of the United States Steel Corporation as a thing to be permanently reckoned with in the industrial world. Prophets were not wanting who foretold at the very inception of the organization that a great labor strike would some day paralyze the energies of the great concern, bringing impotence and disaster in its train. The Corporation will apparently emerge stronger than ever from the conflict, and with removal of the dark cloud that threatened their future. In this case a great industrial consolidation has shown a wisdom and energy which have done much to confirm the public confidence.

The monthly blast furnace statistics of *The Iron Age* for September last show a moderate decline in the current production of pig iron, the weekly capacity of the furnaces in blast being placed at 299,861 gross tons, as compared with 303,847 tons on August 1. The decline is explained as being due principally to the stoppage of four furnaces of the National Steel Company, having a total weekly capacity of 10,000 tons. This reduction in the output, however, was partly offset by the starting of furnace plants in other parts of the country. While there has been an accumulation of furnace stocks of pig iron in some districts, there has been a decline in others, leaving a net reduction in stocks of about 10,000 tons for the month. An interesting fact bearing upon the pig iron situation is the blowing in of a number of new blast furnaces, all of which are modern, and will either swell the output or crowd older, weak plants out of the ranks.

A QUESTION OF DISCOUNTS.

An interesting matter, which caused a great deal of discussion, recently came up between a hardware and stove salesman and one of his customers. The customer had for some time been paying the salesman 40 per cent. discount on a certain line of goods, and on the occasion referred to had decided that market conditions justified him in asking for a lower price. He said to the salesman that he would have to do 5 per cent. better. The salesman asked him to make up a list of the goods for which he would like to place an order, and then said that in view of the size of the order and the conditions prevailing he would allow an "extra 5." The buyer thanked him for the reduction made, and said: "Of course, this makes the discount 45 per cent." "No," said the salesman, "the discount is 40 and 5, not 45, as to make the discount 45 would be a reduction of over 7 per cent., and that is more than I would be permitted to give. I meant, when I agreed to give an extra 5, that it would be just what that expression means and not a 'straight' 5." The buyer and the salesman then had a long discussion relative to the difference between an "extra" 5 and a "straight" 5.

Prices and Catastrophes.

One of the most obscure phenomena of the stock market is the decline of prices upon the death, or anticipated death, of the head of the State. War, pestilence and famine are afflictions which interrupt trade and destroy wealth to such an extent that any danger of one of them could not fail to cause a good part of the community to turn its property into money. There are governments so highly centralized and so strictly personal that the death of the monarch or dictator creates uncertainty as to the maintenance of public credit or the development of commercial legislation, which must indispose men to buy for a time and increase the willingness to sell. The Czar of Russia is well known to be averse to war; no one knows anything about his heir; the Czar's death, therefore, might not unnaturally create uncertainty and apprehension and incline men to turn property of variable value into coin, in which shape it could be hoarded or be easily transported to some safer field of investment. President Diaz is equally well known for his determination to maintain order in the republic and to sustain the public credit at all costs, and his power is hardly short of that of a dictator. His death, especially if it were sudden, would inevitably raise some question regarding the stability of the government and the payment of its obligations, and these things would affect prices in Mexico pretty widely until it were known what sort of a man would succeed him.

But in this country there is no reason why the danger of the President's death, or even the actual event, deplorable as it would be, and although it were by violence instead of disease, should make men anxious to sell and reluctant to buy securities. The national credit is long established beyond question, and the integrity of the currency fully secured. Civil order is as certain under one President as another, and is perfectly secure if there were no President at all, in view of the very limited power which the President has over legislation and even over the foreign relations of the country.

But the stock market is influenced by a multitude of forces. No man pretends to know all of them, and it happens that no one knows just who constitute the stock market, for this is made up of all the buyers and all the sellers, and not alone, or chiefly, the members of the exchanges. Therefore there is always an uncertainty about how other people will act. The man who sees no reason why the attempt to kill the President should reduce values still has an idea that it may lead some one else to sell, or may indispose persons to buy what he is carrying on a margin or on borrowed money, and he may sell merely to be sure of selling before the market has been lowered by the selling of others.

An influence of this sort is, of course, ephemeral; it may be severe for a short time; it cannot last long or go far. Happily, the Government does not consist of any one person nor is the business of the country entirely dependent upon the Government.—*The Iron Age.*

Exports to China are beginning to assume their normal proportions. The July figures of the Treasury Bureau of Statistics show the total exports to China from the United States at $2,622,475, against $1,349,697 in July, 1900. For the seven months ending with July, 1901, the total exports to China were $9,703,787, an increase of more than $600,000 over the corresponding seven months of the preceding year. Our exports to China in July were larger than in any preceding July, a fact which seems to indicate that our commercial relations with China are not likely to permanently suffer as a result of the events of the past year. While nearly all the articles of export show a marked increase, it is, however, in cottons, mineral oils, lumber and bicycles that the increase is most pronounced.

THE NEW YORK STOVE TRADE.

The middle of September has been reached without the stove trade having felt any of the rush that usually comes with the fall business, although in New York there is plenty of evidence that the transfer of stock from manufacturers' warehouses to the stove dealers' showrooms is progressing smoothly, and some houses report the volume of business, so far, in excess of that of last year. The statement is also made that there is no overwhelming supply of stoves, particularly in some lines, and expression is given to the hope that this may lead to an advance in the price of stoves. Whether this hope will be fulfilled is a moot question. At present there seems to be a variety of prices in the market which lacks the firmness that would be generally beneficial. Notwithstanding this certain houses are holding some of their goods at prices 5 and 10 per cent. higher than those generally ruling, and these concerns expect, before the season closes, to find no difficulty in moving their stock.

As yet there has been no weather cool enough to suggest the approach of winter, and to make the need of repairing or replacing old stoves keenly felt. A seasonable cold snap, however, cannot now be long deferred, and then a rush is expected by the stove manufacturers, who are preparing to meet it. The facilities for handling a fall rush in the stove trade are better than ever before, but if any difficulty is experienced in securing stoves promptly it will be well to consider that the railroad and transportation companies do not make the same provision to serve the stove dealer as do the manufacturers.

Dealers by this time should have a fair idea of what they will need and place their orders so as to avoid disappointment. There is no excuse for further delay on the score of possible concessions in prices. The manufacturers have watched the depletion of their stocks with satisfaction and know that the rush has not yet come. Consequently they feel no necessity of offering inducements just to make a showing on their order books. Those goods which have tin plate and sheet iron in their equipment are more likely to stiffen than to soften in price owing to the scarcity of such material and the high prices ruling for it owing to the strike at the rolling mills.

STOVE PRICES HARDENING.

Indications are now appearing which point to a general advance in the price of Oak stoves and other cooking and heating apparatus made largely of sheet steel. Western representatives of some prominent manufacturers of Oak stoves have been advised that hereafter no more orders will be accepted at the price heretofore prevailing, and a new discount is named which makes an advance of more than 5 per cent. It is claimed by these manufacturers that the prices of Oak stoves have for some time ruled so close to actual cost as to make the trade realize very little, if any, profit. The great advance in the cost of sheet steel has so seriously increased the cost of manufacturing these stoves that an advance has been made imperatively necessary. They further fortify their position by stating that, unless the supply of sheet steel is speedily increased by the starting of more sheet mills, they will be unable to furnish some sizes of stoves, as their stock of the necessary sheets has been completely exhausted, while for other sizes they have but a limited quantity of the necessary sheets.

This is not an isolated case, but represents the experience of quite a number of stove manufacturers, and, although most of the large stove makers are represented to have been so fortunate as to lay in good stocks of sheets before the strike, it is believed that the production of sheet steel goods will be so curtailed by the shortage suffered by other manufacturers that the supply will be considerably under the quantity usually available. Stove dealers for some time have been making their purchases on an extremely conservative basis, conducting what is termed a hand to mouth business. They have not been disposed to take any chances of prices being reduced before they disposed of their season's stock, and have been under the impression that they were acting wisely by keeping themselves in readiness to take advantage of any downward tendency that might manifest itself. It now seems quite probable that those who defer the purchase of a sufficient supply of goods to cover the trade which they can reasonably expect will make a mistake. The season is nearly at hand when stove consumers will urgently need stoves and when they will expect their regular dealers to be able to supply them immediately upon application. It will then be impossible for many of the dealers to secure just the kind of stoves they need and to have them shipped just when wanted. They can expect to pay higher prices for what they are able to get, and probably may be compelled to take something different from what their customers desire.

Welcome Furnaces.

The Syracuse Stove Work, Syracuse, N. Y., and 231 Water street, New York, are adding to their line a variety of styles of hot air furnaces under the name Welcome, which are shown in a new catalogue just issued. The A series of the Welcome is made with both cast iron and steel radiators, with sectional fire pots and labor saving grates. The radiators are so constructed as to secure indirect passage of the products of combustion through the furnace and to utilize their heat. The B series of furnace is made with a sectional fire pot and large upper dome, from which the products of combustion pass to the steel radiator, where they make an entire circuit of the furnace before escaping to the smoke pipe. These furnaces are made both portable and brick setting. The C series of furnace is made with both steel and cast iron radiators, expsing a large amount of heating surface, and designed to secure an indirect pasage of the hot gases through the furnace. The D series is divided into the 400 and 500 series, made with both steel and east iron radiators, and designed to meet the needs of the trade where competition is strong. The catalogue also shows, by means of broken views, the A series and C series of Welcome furnaces, arranging for combination warm air and hot water heating. The furnaces vary in size from 16 to 34 inch fire pots. The catalogue gives the full dimensions of all the various parts and the sheet iron work, and one page is devoted to the rated heating capacity in cubic feet for their furnaces and combination heaters. Two pages are devoted to the various sizes of Welcome registers which the house are putting on the market. The last page is devoted to a system of exhaust ventilation for use in connection with hot air furnaces in private residences and other buildings.

The Anthra Cinderella Oak

is the subject of a four-page folder which has been issued through the office of Western Sales Agent W. D. Sager of the Pittsburgh Stove & Range Company of Pittsburgh, Pa. The stove is a double heater and intended for using hard or soft coal or wood as a fuel. The design is handsome in its ornamentation, nickel being judiciously employed at a number of points to bring about striking contrasts with the black surfaces. Touching its constructive features, special reference is made to the air blast, which is said to be entirely new as applied to an Oak stove, and valuable in point both of economy and cleanliness. It is introduced by placing a hollow cast iron ring with perforations on the inside between the top of the fire pot and the body of the stove. Cold air is drawn through openings in the main front directly under the feed door, becoming superheated in its passage, and is discharged over the top of the fire, thus aiding in the combustion of smoke and gases and producing, the company claim, the best result for the fuel consumed. The fire pot is extra heavy; the ash pit is large and roomy, and the feed door is equipped with screw draft for checking the fire, while the lower portion provides abundant illumination. The dust flue is constructed by connecting the back of the ash pit with the

smoke pipe elbow by means of a pipe through which the dust is drawn direct from the ash pit to the fire, entirely independent of the body of the stove. The Anthra Cinderella is made iu four sizes with diameter of fire pot ranging from 12 inches iu the smallest to 18 inches in the largest size.

Champion Steel Ranges.

A neatly printed catalogue in two colors, profusely illustrated and bound in deep greeu paper covers with side title in silver effects, is being distributed to the trade by the Champion Steel Range Company of 137-139 Viaduct, Cleveland, Ohio. The publication consists of 44 pages and is known as "Catalogue No. 5." The matter relates to the various lines of Champion steel ranges, which are manufactured by the company In sufficient styles and sizes to meet various requirements. Emphasis is laid upon the saving in fuel effected by the use of these ranges, the construction of which is said to differ from others in that they do away with either the cumbersome sand box or cement bottom, thereby resulting in a saving in weight. The arrangement of the air flue below the main heatlng flue is such that the air is conducted through the ash pit to the combustion chamber, and in passing under the main heating flue it becomes heated, thereby producing, it is claimed, a more perfect combustion and economy In fuel to the extent of the heat imparted to the air in Its passage.

The ranges are made of cold rolled steel plates, carefully fitted and riveted together, and are liued with a heavy quality of asbestos. The fire box is lined with 2-inch Savage fire brick and fitted with duplex grate. The oven is so braced as to prevent warping and yet not to Interfere with the heatlng of it. The oven doors open down, forming a shelf and are so balanced that they can be opened and closed with ease. The lines of goods considered include the Champion Active, Champion Marquart, and Champiou Junior. In connection with the descriptive matter tables are presented showing the sizes in whlch the goods are made, the dimensions of the ovens, top surface, size of cooking holes, and list prices. A feature of the closing pages is iuformation for the dealer when ordering repairs and settlng up stoves.

Accompanying the catalogue is a folder of the company's new double flue, hot blast Champion, which is referred to as effecting a saving of one-third in fuel. The special features of construction include interchangeable key plates, pouch feed, roll top closet, screw draft aud encased cast white enamel portable reservoir.

The Graff Furnace Company.

President William M. Seymour of the Graff Furnace Company, 208 Water street, speut a part of this week in Scranton, Pa., where the company have erected a large modern foundry and plant for the manufacture of rauges and hot air furnaces. For some time past they have been finishing and shipping all the goods at their old plant, at Elizabethport, N. J., to their New York warehouses. Early this week the final shipment of tools, flasks and equipment was made to the new establishment and the old plant was vacated. Mr. Seymour was on the ground at Scranton to see the new plant put into operation. The first heat from the cupola was run off and disposed of by the molders in the foundry in his presence, and the new plant is now in working order.

It is to be expected that some details will need adjustment, but the company are now in full possession of a fine plant, which will enable them to turn out the Faultless and Hero furnaces and ranges so as to promptly meet the demand that the enterprise of the concern has created. Their line of goods is extensive and varied, being well adapted to those who cater for a fiue custom trade as well as those who thrive where competition is the strongest. One of the company's newest productions, now on exhibition at their New York showroom, is the Hero range for builders' use, which appears in a fine new dress, adding a fresh attractiveness to its well earned popularity. The company also have a complete line of steam and hot water heateres. They invite correspondence and investigation of the Faultless and Hero lines.

Sunshine Heating Stoves.

A few weeks ago we reviewed in these columns an attractive catalogue of ranges and cook stoves which was being sent out to the trade by the Readiug Stove Works of Reading, Pa., and we now have before us a copy of a similar publication relating to thelr portable heatiug goods. In conuection with the present issue the company request those who did not receive a copy of the first book to notify them and one will be forwarded. As regards size of page, quality of paper, illustrations, binding, &c., the latest volume is in keeping with the one first reviewed. In presenting it to the trade special attention is called to the Suushine cook stoves, the Daisy Sunshine and the Sunshine Hot Blast, these being referred to as "extra sellers."

The leadiug place is giveu to the Golden Sunshine revertible flue base burner, of graceful proportions and rich exterior, made both as a single and double heater and embodying features of construction which render it powerful in operation. The Regal Sunshine is a member of the same class, and the mauufacturers state that it represents the best that has yet been accomplished in the building of a hard coal heating stove. In this no features have been retained whlch experience and commou sense have condemued, but, on the other hand, several novel, iugenlous and useful iunovations in design and construction are combined with those time tried features which stand approved by the company's experience of over 30 years in the art of stove building. The assortment of Oak stoves which are offered embraces a number of haudsome patterns In sufficient variety to meet the usual requirements. The company claim that the Sunshine Oak, "as remodeled and improved for the season of 1901, is by many points the leadlng stovc of its class." Such attention has been given to the construction of this stove, the makers say, as to produce a maximum amount of heat with a minimum consumptlon of fuel, while at the same time every item of convenience has been covered and durability maintained.

The Sunshine Hot Blast, whlch is made in three sizes, has au outside body of polished steel lined with corrugated iron. The grate is of the center dlscharge, anticliuker type; the fire pot is sectioual and made of sufficieut weight to be durable, and the upper section extends up far enough to protect the sheet iron body without Interfering with the best heating results. Several broken views of the stove are presented, showing the internal construction.

The closing pages of the volume are given up to a varied assortment of air tights, globe, cannon, box and laundry stoves, as well as an extended illustrated description of the Sunshine Fireplace Heater. The other features include directions for setting up and operating stoves, ranges and furnaces, and a comprehensive index alphabetlcally arranged.

Monarch Heaters.

An interesting little catalogue of 32 pages which is being sent out by the Monarch Stove Mfg. Compauy of Mansfield, Ohio, calls prominent attention to the Monarch gas heaters and the Monarch asbestos lined ovens. The heaters are intended for using natural or artificial gas as a fuel, and embrace a variety of styles capable of filling every conceivable demand. The company state that every pattern in the line is "original in construction, economical in operation, beautiful in design and finish, and wonderful in results." The Monarch Ventilator, No. 164, has been improved for this season by the substitution of cast iron fire box section in place of sheet steel. It is referred to as a "calorific wonder," and the equal of a hard coal base burner. Under the name Monarch the company also offer a combination of an open fire place and radiator, this being one of their greatest sellers. A new pattern for 1901 is

the Monarch, No. 69, which has the same body, burner and asbestos baek wall as their No. 67, but without the radiator tubes at the rear. Many other heaters of the radiator type are shown, together with hot plates, ovens, &c.

Striking It Rich.

The Estate of P. D. Beckwith, Dowagiae, Mich., have issued a particularly attractive book under the above title. The book takes as its theme the experiences of gold miners. The cover bears several pictures lithographed in eolors, one of whieh shows a group of miners in a cabin enjoying the comfort of a Round Oak stove. The contents of the book begin with a narration of miners' experiences, and leads up to their "striking it rieh." An analogy is ingeniously drawn between such miners and those who after suffering discomforts from the use of the wrong stove discover the right one, which brings pleasure. A full description is then given of the Round Oak stove. This description is enriehed by illustrations showing the special points of the stove. The narrative proceeds to a discussion of the advantages of the Beckwith air tight, which is followed by a description of the Round Oak room heater. The next subject taken up is the Round Oak furnaee, the special features of which are fully set forth. Comprehensive treatment is given to Round Oak ranges and cooks. Attention is called to the fact that both steel and cast ranges are made under the Round Oak trade-mark. The book is interspersed with good points under the head of "nuggets." The mining idea is maintained throughout, not only in the allusions whieh are made to the Round Oak goods, but also in the charaeter of many of the illustrations.

Universal Stoves and Ranges.

We have received from Cribben & Sexton Company, with office and works at Erie and Ontario streets, Chicago, Ill., a copy of their illustrated eatalogue and price-list of Universal stoves and ranges for the season of 1901-1902. It is a volume of nearly 200 pages, measuring 6 x 9 inches in size, and bound in heavy paper eovers, the design of whieh represents a casting, with the name and address of the company and a *fac-simile* of their trade-mark in bold relief. Upon opening the cover the first thing to attract the eye is a *fac-simile* of the warrant, guarantee and security bond which the eompany issue with their goods. In the arrangement of the printed matter steel ranges are first considered, these being offered under the generic name, Universal, and embracing an assortment calculated to meet all possible requirements. Among the early pages of the volume special attention is given to the white poreelain oven door linings used in eonnection with the Universal stoves. The eompany state that this porcelain lining is fused to the iron at an intense degree of heat, making the union perfect and permanent, and on this account it will stand any heat to which the stove may be subjected.

Following the steel ranges attention is given to east goods, including cooks and ranges, after which heating stoves are considered, the Regal Universal occupying the place of honor. This is an extra heavy base burner having large circulating air flue, double heater attachment, loose fire pot, easily rotated, and which can be taken out through the front door, and duplex grate. It is made in three sizes without, and one size with oven, and is designed for using hard coal as a fuel. The Lillian, among the low priced base burners, is furnished with Ransom shaking grates, antomatic swing cover, capacious ash pit and fire pot, which is removable through the upper front doors. Other goods include Oak, Cottage Parlor, Franklin, Globe, Cannon, Todd and Box stoves in great variety.

The catalogue concludes with price-lists of hollow ware, pipe shelves, warming shelves, &c. The question of repairs has not been overlooked in the compilation of the catalogue, and the dealer will find for his guidance in ordering stove repairs a number of skeleton cuts of eook stoves, ranges and heaters, with the parts numbered, and referring to accompanying tables, giving correct names.

Garland Soft Coal Specialties.

The Michigan Stove Company have issued a special trade edition of the *Garland Magazine*, whieh treats of hot blast, down draft, self feeding and retort stoves, designed specially for the use of soft eoal. The Hot Blast Oak Garland is a stove in which the eoal is fed from the top and the hot blast draft is always in operation, except when starting the fire. Air is sprayed on the hottest part of the fire, making perfect combustion and turning the coal into eoke, which then burns like hard coal with a saving of one-third of the fuel. Direct radiation is obtained from the fire pot, whieh is exposed. This stove is described as a perfect smoke and gas consumer and keeps fire 36 hours. It is provided with the company's patent combined serew draft register and grate shaking door, rendering the stove absolutely air tight when the draft is closed. The Magic Garland is also an air tight stove, which is a smoke and gas burner. It has a hot blast hanging from the top of the stove and closed by a revolving cover. This stove has a feed door in front. The ash pit door and screw draft are fitted air tight by machinery. The fire pot rests on strong supports and is the same cone cover center shaking grate as is found in the eompany's oak stoves.

The Solar Garland is another type of air tight stove fed from the top This stove has a hot blast draft also hanging from the top of the stove. The ash door and damper are likewise fitted air tight by maehinery. The Radiant Garland is a self feeding slaek burner for soft coal, which is of a highly ornamental pattern, being richly decorated with cast fret work. The Retort Oak Garland, another self feeding stove for soft eoal, has made a remarkable record for its perfect fire keeping qualities. It is stated that by following the directions a fire need be built but once during an entire season. This stove possesses all the advantages, in its perfect fire keeping, of a hard coal base burner. It has a cone draw center grate which enables the fire to be easily freed from clinkers. This stove has a brilliant illumination and is very handsomely decorated. The leading features of all these stoves are set forth in handsomely exeeuted illustrations.

Loth's Cook Stoves, Ranges and Heaters.

What is known as Catalogue No. 5, covering goods for the season of 1901-1902, has just been issued by the W. J. Loth Stove Company of Waynesboro, Va. The coneern, who were established in 1890, manufacture various lines of cook stoves, ranges and heaters adapted to meet the requirements of the Southern trade. The company state that they reeently enlarged their plant, installing new machinery, and that since the last edition of the catalogue was issued they have brought out some new patterns. In the arrangement of the matter the opening pages are devoted to the usual announcement to the trade, some suggestions to eustomers on the subject of setting up a stove, directions for operating stoves, hints about chimneys, and a statement relating to terms, &c.

The leading place in the work is given to the Diamond, a six-hole range for eoal or wood, offered in three sizes, following which is Loth's Fannie, an attractive five-hole range made in many sizes for eoal or wood; the Zip, a low priced two-hole range; the F. F. V., a four-hole cook stove, made in six sizes; Loth's Marvel, an attractive cook made in one size only, and embodying the modern features; Loth's Fame, for wood only; the New South, and the Wonder, the latter being referred to as a new cook stove for hard times. Among the heaters we find the Blue Ridge, Franklin, a line of Cottage Parlor, Cannon, Globe and Box stoves, as well as a number of patterns of Airtights. A line of hollow ware and more or less extended reference to stove repairs complete the catalogue.

The M & D Ranges.

The M & D Range Company, 96 to 100 Lake street, Chicago, have issued illustrated circulars which call attention to their steel ranges and combination steel and gas ranges. The company make a great variety of steel ranges. The assortment which they present includes very large ranges, designed for the use of hotels, restaurants, public institutions and other purposes necessitating the employment of facilities to prepare meals for a great number of persons. It is claimed that the company build the heaviest goods of this character made by any manufacturers. The large ranges are built with as many sections as may be required, all of which are connected as one range. They also manufacture the usual sizes for domestic purposes. These sizes present a full assortment of styles to meet the necessities of any family. The combination range was first brought out by this company, and has proved a popular piece of kitchen furniture. The arrangement is such that either coal or wood can be used in running one part of the range, or gas can be used in operating the other part. This enables the range to be used according to the season or in conformity with any other special requirements. The M & D combination range is handsomely made, and is fitted with a ventilated roll curtain top if desired. A special circular illustrates one of the new United States war ships as an appropriate accompaniment to a list of war vessels, transports, revenue cutters, steamships and other vessels on which the M & D steel ranges are used entirely for cooking.

Buck's Stoves and Ranges.

One of the handsomer stove catalogues of the season is that which has been issued from the press by Buck's Stove & Range Company of St. Louis, Mo. The 168 pages of letterpress are bound in heavy board covers in imitation of white enamel, embellished with a *facsimile* of the company's trade-mark in old gold. A feature which the dealer will appreciate, especially if he keeps his stove catalogues on file, is a back title, consisting of the name and address of the company, the number of the catalogue and the year of issue. The printing is upon a fine quality of surfaced paper and the illustrations are in keeping with the general standard of excellence of the rest of the work.

In their greeting to the trade the company refer at considerable length to the great white enamel line, and point out how impossible it is to show in black and white the beauty and utility of this line of goods. A number of pages at the outset are devoted to a consideration of the question of quality, the matter of claims and repairs, the draft, with directions for operating stoves, and diagrams showing a few of the causes why a stove is often condemned when the fault is solely with the chimney. The leading place in this handsome catalogue is given to Buck's steel range, which is illustrated by means of an engraving in which the nickeled, bronzed and black iron surfaces are faithfuly represented. This range embodies those features which experience has shown to be desirable, and which typifies all that is best in range construction. Steel ranges occupy something like 40 pages of the catalogue, after which we find 25 pages devoted to cast ranges.

Steel and cast cook stoves are next in order, after which we find the heaters, with Buck's Radiant base burner in the leading place. The latter is represented by means of a handsome engraving, showing the contrast of nickeled parts with black iron surfaces, while others show some of the styles in which the heater is offered. Buck's hot blast oak series embraces a number of interesting constructions, following which attention is given to Buck's Old Style Oak heaters, with under draft and straight fire pot. The catalogue concludes with a miscellaneous assortment of Franklin, Todd, Cottage Parlor, Box, Globe, Cannon and Laundry stoves and with telegraphic code arranged alphabetically.

THE 56-page catalogue and price-list which is being distributed by the Henry N. Clark Company, 56-58 Union street, and 43-45 Friend street, Boston, Mass., shows a variety of Heating Stoves, including several entirely new patterns for this season's trade. Prominence is given to several lines of sheet iron surface burners embodying the modern improvements, a number of Oak Stoves of pleasing exterior, together with Airtights, Cottage Parlor, Box, Cannon and Laundry Stoves. Attention is also given to Oil Heaters, Galvanized Portable Ovens, Basket Grates, &c.

ODD PLATES.

ONE of the latest advertising posters distributed by the Lehigh Stove & Mfg. Company of Lehighton, Pa., is of most striking design and carries in conspicuous letters the caution, "Don't Keep House Without a Lehigh Stove." The picture with which the poster is embellished represents a colored bride and groom just taking their departure from the house in which the ceremony has evidently taken place, and they are being started on their journey with the accompaniment of rice and old shoes in lieu of the proverbial slippers. It represents a striking study in many respects, and affords an excellent opportunity for humorous comment. Hung in a dealer's store, the poster cannot fail to instantly attract attention, which was obviously the intent of the artist who prepared it, and at the same time it serves as an excellent medium for keeping the name "Lehigh" prominently to the front. The poster is bound at the top and bottom with metal strips, and has an eye for suspending it upon the wall.

THE HENRY N. CLARK COMPANY, 56-58 Union street, Boston, Mass., are sending out a circular letter calling the attention of the trade to a few facts in relation to their Stove, Furnace and Range Repairs. They have been in the business 20 years, and recently consolidated with the late T. A. Westcott by purchasing his entire business, including patterns, good will, &c. The company carry a large stock covering an immense variety of repairs, and state that they have business connections with every prominent manufacturer in the country. Many repairs that cannot be obtained in Boston or elsewhere, the company claim, can be promptly procured through them.

WILMOT, CASTLE & Co., Rochester, N. Y., are just issuing a very attractive pamphlet in the interest of their Stove Pipe Radiator, entitled "A Modern House Warming." The cover bears a design in a two color effect showing a cottage residence, thermometer and one of their Radiators. These Radiators are designed to be connected with the pipe of a steam boiler, Hot Air Furnace, kitchen Stove or parlor Heater, either in the same room with the Stove, or in a room above. It is pointed out and emphasized by means of testimonial letters that these Radiators prevent overheating of the chimney, utilize heat that would otherwise go to waste, and are capable of heating from one to three chambers, according to the size used and the character of heating apparatus with which they are connected. A judicious distribution of these little booklets by the Stove dealers would go far toward bringing in a profitable trade.

W. J. BURTON & Co., Detroit, Mich., are bringing to the notice of Stove dealers throughout the country the merits of their Fuel Economizer and Radiating Damper for use in connection with the pipe of Stoves, Ranges and other heating apparatus. They are sending out an interesting illustrated pamphlet showing the internal construction of the device with the wings opened and closed to regulate the draft. The Economizer is also shown in connection with a parlor Heater for heating a chamber above. It is observed that by its use heat can be enjoyed in an additional room without expense, labor or dirt. Testimonial letters are also presented from those who have used the device with satisfactory results.

THE CHATTANOOGA STOVE COMPANY, Chattanooga, Tenn., are contemplating a large addition to their foundry, with a view to providing increased facilities.

THE KELSEY FURNACE COMPANY, Syracuse, N. Y., are directing the attention of the trade to the merits of

the Kelsey Warm Air Generator by means of a colored card which they are sending through the mail. It carries the statement that "the house that Kelsey heats cannot be anything else than a perfectly and properly heated house." Reference is made to the fact that while the study of heating apparatus is not highly exciting, yet it is very necessary if one intends to keep the home at a comfortable temperature during the cold months of the year. The company state that the problem of heating a given number of rooms and maintaining an even, comfortable temperature on the coldest days, as well as on moderate days, and at the same time furnishing the proper quality of heat as well as the quantity and doing the work economically is one which only a Kelsey can solve.

The Duffy-Trowbridge Stove Mfg. Company, Hannibal, Mo., have purchased a large piece of property with a view to extending their already large Stove works. The property comprises what is known as the Patton factory building and the ground attached to it. This property extends an entire block and gives the company the advantage of 300 feet of additional railroad track. The factory is a large brick and frame building, which will for the present be used for storage purposes.

The Excelsior Stove Mfg. Company, Quincy, Ill., recently increased their capital stock from $60,000 to $80,000. The company's business had grown to such an extent that the additional capital was necessary.

The Union Stove Repair Company, Chicago and Omaha, are conducting a business which they state is the result of long years of agitation by the Stove manufacturers of the country for some central place for the distribution of original repairs. Through this company can be obtained the original repairs for most of the leading Stove establishments, thus presenting a convenience which can hardly be overestimated by the trade. The company have prepared an order book which they term "Original Order Book," which is designed on an absolutely new plan and is believed to enable orders for repairs to be made out more accurately and with less liability to mistake than anything heretofore issued. This order book contains a large number of blanks, each of which is connected with a stub on which the details of the order can be entered for preservation by the dealer. The blank is detached and sent in to the Stove Repair company. The blank has columns carefully headed covering all the necessary information to insure accuracy. A copy of this order book is furnished with the first shipment of Repairs to all customers..

W. H. Colebrook Sons & Company, Syracuse, N. Y., are not likely to be forgotten by the Stove and Furnace trade when in need of Cement and Putty, as their circulars are well calculated to leave a lasting impression. A little rubber fish attached to a card bearing the statement, "We're Still Fishing for Your Order," and a poetical reference to Colebrook's brand is the latest from the house.

New York's Latest Model Tenement.

We have referred on more than one occasion in these columns to the good work that is being done in New York City by the City & Suburban Homes Company in the erection of model tenements for the better housing of the poorer classes of the population, who are now too often forced to inhabit crowded and unsanitary tenements in the congested districts of the city. None of the model tenements now in existence, however, will compare in magnitude and in perfection of equipment with the building of this character for which plans were filed a short time ago by the corporation above mentioned. Especial interest attaches to this building in that it is practically the first to be erected under the new Tenement House Law.

The building will have a frontage on Avenue A extending the entire block from Seventy-eighth to Seventy-ninth streets, will be six stories in hight and will contain 186 separate apartments of three and four rooms each. The *façade* will be of golden buff colored bricks, with Indiana limestone and terra cotta trimmings. The entrances will be of polished colored granite, the vestibules will be wainscoted with marble, and the floors of the entrance and staircase halls of colored inlaid tiles. The roof will be of plastic slate, and the fire walls will be carried above it so that it can readily be transformed into a roof garden or playground for the children should this be found desirable. There will be eight staircases, inclosed in heavy brick walls, with absolutely fire proof floors, stairs, doors and windows. The first floor will contain nine stores, 16 apartments and a number of shower and tub baths for the use of tenants, while each of the upper floors will be divided into 34 apartments.

The aim of the architects, Harde & Short, who spent several years in the study of the economic planning and construction of improved model tenements, is to make each apartment in itself a complete home, with plenty of light, air and ventilation. Each will be supplied with a gas range for cooking, hot water from the basement, steam heating, dust shoot leading to the cellar, where there will be a special furnace for consuming the sweepings, refrigerator space in each private hall, letter box, speaking tubes and electric vestibule door openers. There will also be dumb waiters, and a complete laundry and steam clothes drying apparatus in the basement. A feature that would doubtless be highly appreciated by tenants of some of the higher class flat houses of the city will be sound proof floors and partitions which will separate each apartment from its neighbor.

The entire structure has been so planned that there will be no interior vent shafts of any kind, but the rooms will have from one to three windows opening directly on the street, yard or large open courts. When the building is completed it is the intention of the owners, the City & Suburban Homes Company, to commence work on a second section in the rear, fully as large as the one now under way and separated from it by a 20-foot roadway. When these improvements are fully carried out accommodations will be afforded for a greater number of people than are to be found in many of the smaller towns and villages of the country.

Large Shipments of Gas Stoves, Washing Machines, Etc.

A. Van Der Laan & Co., 18 Broadway, New York, importers and exporters, are the branch of a house in Rotterdam and Amsterdam, Holland, who export general lines of American manufactured products as well as foodstuffs, &c. Their business is mainly confined to Holland and Belgium. They recently placed with the Criterion Mfg. Company, 443 Greenwich street, New York, what they believe to be the largest export order for gas stoves so far given in this country from continental Europe. During August 575 gas stoves were shipped, one lot of 102 cases going August 24 by the "Enxinia," and early in September another order for 980 gas stoves was placed with the same concern, the last lot measuring about 200 tons, shipment of which has been arranged by the Phœnix Line steamer sailing September 21. A recent shipment of 600 washing machines was made in one lot, and since the beginning of the current year, so far, 6000 have been sent forward. They have also forwarded direct to France recently 15 cases of stoves and radiators. The business of the New York house is entirely with the main houses in Holland.

Scott & Bobb have lately engaged in the Hardware, Stove and Plumbing business at 812 North Kansas avenue, Topeka, Kan.

M. R. O'Neill, wholesale and retail dealer in Hardware, Stoves, &c., Fargo, N. D., has opened a branch store at Sisseton, S. D., under the firm name of O'Neill & Gilmer, with Mr. Gilmer as resident manager. They will carry a complete line of Hardware and Furniture and would be pleased to receive catalogues, &c.

The Abingdon Trap Company, Abingdon, Ill., who were organized about two years ago for the manufacture of Mouse and Rat Traps, are meeting with an increasing sale for their Eli Trap. They have commenced to appoint resident agents in different parts of the country.

Office Rules of a New York House.

Conspicuous on one of the walls of the store of Neal & Brinker, wholesale and retail dealers in hardware, cutlery, &c., and Eastern and export agents for a number of well-known manufacturers, 18 Warren street,

Office Rules:

Time Allowed for Interruption During Business Hours.

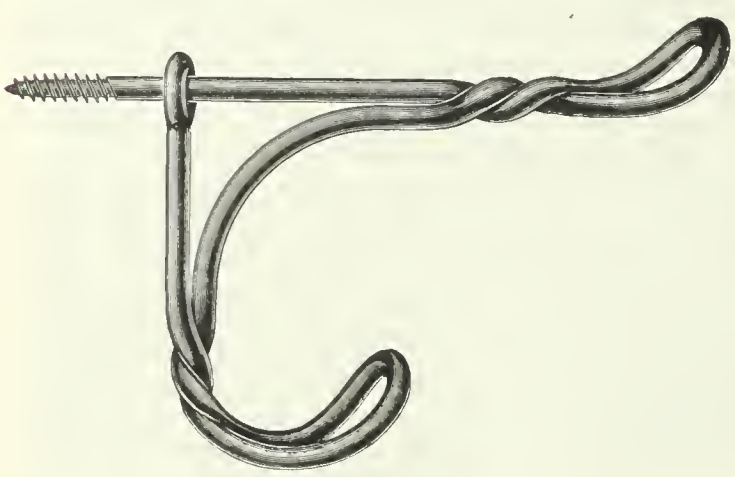
	Hrs.	Mnts.	Secs.
Friendly Calls		2	
Life Insurance Agents			½
Peddlers and Begging Agents			¼
Friends with a Soft Snap			10
Friends with Wheels in their Heads			1
Friends who will talk Baseball		Nil	
Friends who want us to go Fishing	2		
Friends who want us to go to Lunch	1		
Friends who want to Borrow $5			¼
Friends who want to Borrow $10			¼
Friends who want to Borrow over $10		Nil	
Friends who want to give Orders		No Limit	
Male Bores			2
Female Bores			1
Policemen		All Night	
Customers in General	6		
Customers who want to buy Hardware	12		

NEAL & BRINKER,
Hardware,
18 WARREN ST., NEW YORK.

New York, are the office rules which are set forth in the illustration given herewith. They also appear on the back of their business card. While the rules are of a facetious character, it will be observed that they emphasize the necessity of giving strict attention to business. It will be noticed that a good deal of time is allowed for customers, while "friends" and other interruptions are given insignificant attention.

The King Coat and Hat Hook.

The accompanying cut illustrates a wire coat and hat hook put on the market by the Parker Wire Goods Company, Worcester, Mass. It is pointed out that the brace



The King Coat and Hat Hook.

is fastened at both ends by twisting, and that the bearings are broad on both top and bottom hooks. The correctness of construction and the strength and neatness of the hook are alluded to. It is made in 2½, 3 and 3½ inch sizes, coppered, japanned, chestnut bronzed, retinned, brass plated, nickel plated and of brass.

A RECENT FIRE slightly damaged the store of Smith & Becker, Camden, N. Y., wholesale and retailers dealers in Shelf and Heavy Hardware, Stoves and Tinware, Agricultural Implements, Sporting Goods, Sash Doors, Blinds, &c.

The Red Man.

During a recent celebration of the Red Men at Laredo, Texas, the Red Man whose picture is printed herewith kept guard in the window of Deutz Bros. This display was the handiwork of Wm. H. Curry, to whose lot falls the window trimming.

The head of the Indian was formed of a large White Pitcher, the ears and the nose of plaster paris, the shoulders of a Steak Plate, and the neck of a scalloped Bowl. A large Feather Duster with daubs of Paint on some front feathers was stuck into the Pitcher as a head dress. The face, &c., were decorated with Yellow Ocher, Ultramarine Blue and Vermilion. To form the body a shelf was put on a bracket fastened to the back wall of the window, and this shelf formed the support for shoulders and head. For the chest and body a large knitted Game Bag was tacked over the edge of the shelf. The legs were formed of two Leather Carbine Scabbards, the feet of heavy water proof Hunting Shoes. Hunting Leggings were put on and, coming up the legs, covered

The Red Man.

the part where Scabbards were put in the Shoes. The arms were formed of Leather Pistol Scabbards stuck into each other and fastened together by strings in the back of same, and also fastened to the shelf for support. The fingers were Clothes Pins stuck to the Scabbards, with an empty Paper Shell stuck on each. A loaded Cartridge Belt, fastened around the waist and supported from the back, held a Revolver in a Scabbard, a Bowie Knife and an Ice Hatchet that served as a tomahawk. A Winchester Carbine rested against a box beside the figure, and the floor was covered with sand. In the very front of the window the name of the firm was formed of Cartridges placed in the sand. Drapery and flags were used for decorations. All the goods shown were from stock, including the Flags, which are handled in this store.

In the absence of a Pitcher a stone mason's Mallet set on Tin Pans could be decorated and made to form a good likeness of an Indian.

This display attracted very marked attention, which is the general result where grotesque displays are made from store goods, and many a laugh was had at the Red Man.

SOUTHERN HARDWARE JOBBERS' ASSOCIATION have just issued a little pamphlet concerning the *personnel* of the association. It gives the officers and members of the executive and standing committees for the ensuing year, and also the membership of the organization comprised in the States of Alabama, Arkansas, Florida, Georgia, Louisiana, Mississippi, North Carolina, South Carolina, Tennessee, Texas and Virginia and District of Columbia and Indian Territory.

AMONG THE STEAM FITTERS.

A considerable stir has been made among heating contractors throughout the country by the recent advances in the price of wrought iron pipe and the higher cost of radiation. A prominent Western contracting house are authority for the statement that, in consideration of these advances what, at the old prices, would have been rated as a $500 heating plant will now cost at least 20 per cent. more, provided steam fitters are careful to avoid loss on their work. Nevertheless, the shipments of boilers and radiators have been increasing in volume as the season has advanced, and there are many estimates out for large and small work that must be done to make the buildings available, and these contracts must be awarded. A New York contractor is reported to have said that the advance would make a difference of $3000 in one contract that could not be protected, and that careful attention would be necessary to prevent a serious loss.

Many building contractors have delayed closing their heating contracts, and now face the necessity of delay in completing their structures owing to the difficulty in getting the necessary pipe, even at the advanced prices that must be paid. Shipments are made more promptly by the jobbers who have stock than by the mills, the latter being much behind in their orders, owing to the strike.

Furthermore, the jobbers are getting much more for their promptly shipped stock than the mills are quoting for the same material. Apparently it is a time for the heating contractor to go very carefully about closing contracts until he is sure that he can get the material required, and at a price that will enable him to do the work at a profit. Aside from the unusual conditions brought about by the strike, the market on most of the material in the heating trade has held about as well informed buyers expected.

Kieley & Mueller's Catalogue.

A catalogue of 72 pages has recently been issued by Kieley & Mueller, 7-17 West Thirteenth street, New York. The title page gives the addresses of the various branches of the house, and is followed by a well arranged index. The firm call special attention to their long experience in producing steam specialties, and to the fact that where their goods are used the house shares the responsibility, inasmuch as it is guaranteed that they will perform the work for which they are intended. The first 14 pages are devoted to pressure regulating valves for both low and high pressure, reducing valves and several styles of noiseless back pressure valves and exhaust valves. Another section of the catalogue is devoted to the Kieley steam traps for both high and low pressure; some designed to stand pressures up to 250 pounds. A new low pressure grease trap is shown, designed for use in connection with heating systems in which exhaust steam is used. The Kieley cantilever expansion steam trap, a special strainer connection for all makes of steam traps and the Aqua water feeder are other specialties which are shown. The well known Champion return steam trap and pump feed is followed by the New Century steam separator, and the Multi-Tubular oil and grease trap. The Mueller condensation receiver and automatic pump governor and its variations occupy four pages. Condensation pumps, the Mueller boiler feeder, the Kieley positive acting pump governor, and the Rockaway automatic pump governor are also represented. The Climax damper regulator occupies several pages, showing its application and records where it has been used. The Thermo temperature controller, for maintaining a regular temperature of the hot water supply and avoiding the waste of steam, is shown in connection with the tanks used in apartment houses. A variety of other specialties are also shown. The closing pages of the catalogue contain useful information for steam fitters and engineers.

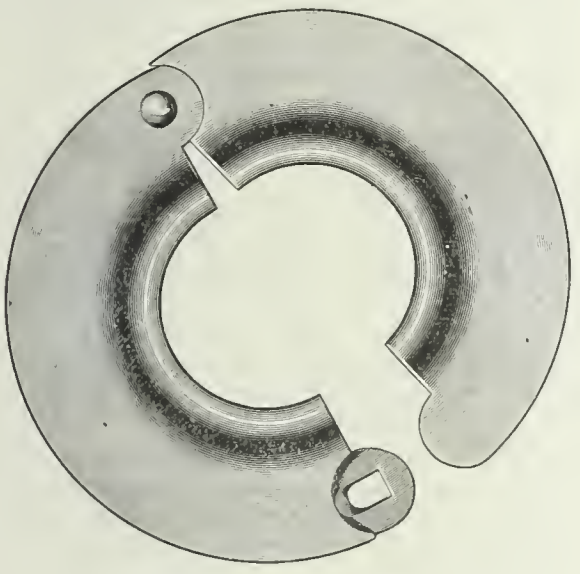


Fig. 1.—Plate Open.

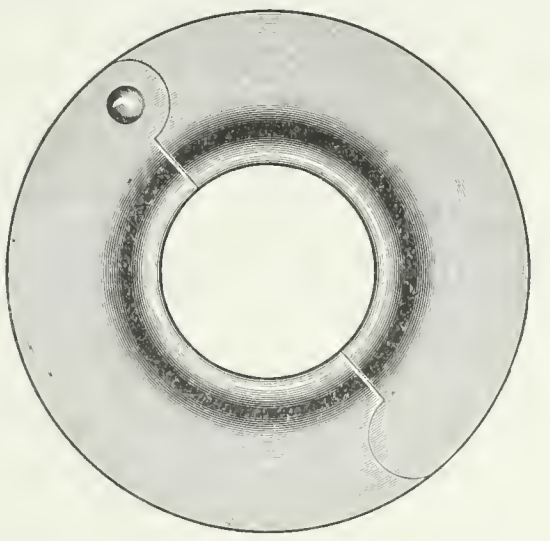


Fig. 2.—Plate Closed.

A NEW FLOOR PLATE.

A New Floor Plate.

In the accompanying illustration we show a new floor plate which is just being put on the market by the Beaton & Corbin Mfg. Company, Southington, Conn. In Fig. 1 the plate is shown open so that it can be slipped around the pipe. Fig. 2 shows the plate closed. In construction, as will be seen, it is made in two parts riveted together so as to form a hinge. On the underside of one part is a nib with catches in the opening provided in the other part to hold the parts together when placed on the pipe. This nib is made to stand at a right angle on one side so as to fasten the parts when caught in the hole shown and inclined on the other so as to gradually slip in place as the two parts are forced together. The plates are fitted so that the different parts are held so tightly together that the joint is very close, presenting a neat appearance. The plates are furnished in different styles of finish, from plain to full nickel plate. They are made of cast iron in a variety of sizes adapting them for plumbers' and steam fitters' use.

McAuliffe & Co., Providence, R. I., are remodeling the plumbing system in the Comanchet mansion, the residence of ex-Governor Sprague, at Narragansett Pier. The work will include 15 bathrooms, besides other fixtures. They are also reconstructing the plumbing in the residence of James Hanley.

UNFAIR CONDITIONS OF SPECIFICATIONS.

A contributor to the *Official Bulletin* of the National Association of Master Steam and Hot Water Fitters presents the following, which will be of interest to all who do contract work:

A specification accompanied by plan, that clearly expresses exactly what is required as to quantity, quality and arrangement of materials, unaccompanied by ambiguous requirements, is not likely to bring out unfair bidding. If such plans and specifications were always furnished to steam contractors there would be no occasion for this article. On the contrary, however, a very large proportion of the specifications on which master fitters are asked to submit bids are so indefinite as to details of quantity and quality as to be practically worthless as a guide to the owner's requirements.

The architect who issues such loose specifications usually protects himself and the owner by a series of ingenious and utterly unfair requirements, which place the responsibility for his own shortcomings on the shoulders of the contractor. These unfair requirements usually take the form of reserving to the architect unrestricted discretionary powers, and subjecting the contractor to conditions which could not be sustained in any court of equity.

Many master fitters do not read the general conditions accompanying specifications, and frequently in bidding to general building contractors the general conditions of the specifications are not shown to them. In many cases where the bidders are familiar with these general conditions they raise no objection to them, trusting that everything will come out all right, and knowing also that if they do object to them the architect will try to place the work in the hands of another contractor who will accept the responsibility.

It is the writer's intention, therefore, to call the master fitters' attention in this article to some of the more unfair of these requirements of specifications. The examples quoted are taken from specifications which have been submitted to him at various times for bids. The first reads as follows:

These specifications are intended to cover all work necessary to make a complete and workmanlike job, and any materials, piping, valves, devices or changes necessary to accomplish this end, omitted from these specifications or not shown on the accompanying plans, shall be furnished by the contractor without extra charge, the same as if specified or shown in full. The plans are intended merely as a guide to the contractor and not as exact working drawings; and if any changes are required in the arrangement of the work, such changes and materials required for these changes shall be made and furnished without extra charge.

Any contractor who will deliberately sign, as part of a contract, specifications containing such a clause, deserves no sympathy. Fate does not intend that he shall continue in business.

All the quotations that follow are taken from one specification, and will serve to illustrate how far it is possible for an architect to make himself the absolute dictator over the contractor and his work, provided he is permitted to do so. Only those requirements which are most unfair are quoted, by no means all of them being included. The first clause I will quote from this rather remarkable specification reads as follows:

Anything shown on the drawings and not mentioned in the specifications, or *vice versa*, is to be furnished or executed the same as though both shown on the drawings and called for in the specifications. The drawings and specifications will be taken as a whole and not separately, as they illustrate and explain each other, and it is their true intent and purpose to include everything proper for a thorough and satisfactory completion of the work (excepting things specially noted to the contrary in these specifications), although such thing may not be particularly mentioned.

A contractor has a proper right to object to a clause of this kind, although it is in general use. It is obviously intended to cover the architect's shortcomings and oversights. In the limited time given to make estimates on work it is impossible to make such comparison between plans and specifications carefully, nor is there any reason why the contractor should assume the architect's obligations. Should there be omissions from plans or specifications which have escaped the bidders' attention, there is certainly no equity in forcing the contractor to assume responsibility for them and give the owner something for which he is not paying.

The drawings and specifications will remain the property of the architect. They are to be used only for the work for which they are prepared. They are numbered and an account will be kept of those given into the custody of each contractor, and they are to be returned to the architect immediately upon completion of the work for which they are made. A certificate for final payment will not be issued until they are so returned.

Contractors should refuse to return plans and specifications unless they have received a final certificate of approval of work done; otherwise, should a dispute arise and reach the courts, the contractors have surrendered their most valuable evidence.

In case of any doubt or difference of opinion as to whether the detail drawings conform to the plans and specifications, or as to any or all questions arising out of them, the decision of the architect shall settle everything in dispute relating to each separate contractor's work, and he shall also settle all disputes of every kind that may occur between any two or more of the contractors, in any way relating to anything connected with any of the contracts, and his decision shall be binding and final on all parties concerned.

To empower one of two parties interested to settle all questions that may arise between them is inherently unfair. It is obvious that should a contractor object to detail drawings furnished him long after the contract has been signed, on the ground that they do not conform to the plans on which he bid, or on which his contract was based, the architect, being the other party interested, should not have the power to settle such dispute. It should be a matter of arbitration. Neither should the architect be authorized to settle all questions that may arise; such authority is entirely too broad and sweeping.

This clause reads like the remark of a certain unscrupulous politician, who said, "I do not care how the people cast their votes, as long as we do the counting." The architect, in this clause, assumes the place of the courts, and while there are many cases which can be satisfactorily settled by a tactful architect, the writer does not believe it wise to agree to a clause so sweeping.

He (the contractor) shall be responsible for all accidents occasioned to or by his work, no matter how same shall occur, or to any part of the same up to the time of its final completion and acceptance by the owner, and he shall make the same good to the architect's satisfaction.

This clause is so absolutely unfair as to require no special comment.

No contractor shall make any claim upon the owner, either for an extension of time or for extra payment on account of delay or damage which it may be claimed has been caused by any other contractor employed upon the work or building by the owner, the several contractors being responsible to each other; and no contractor shall make any claim for an extension of time or for loss of any kind, by reason of the time at which drawings are furnished, examined and completed by the architect, nor on account of any action or failure to act on the part of the architect.

This remarkable clause is a general let out for the owner and his architect, and a general let in for the contractor. Nobody assumes any obligation for anything, except the unfortunate contractor, and he is to assume any and every responsibility that properly belongs to the architect, owner or other contractors employed by the owner, and say nothing. It seems as if the next step after deliberately accepting such a condition should be to apply to the courts for the appointment of a guardian.

The foreman is to be a person satisfactory to the architect, and any instructions or notices given to him shall be of the same force as if given to the contractor. It shall be his duty to see that the work done by the contractor by whom he is employed is carried out, not only in accordance with the drawings and specifications, but in a thorough and first-class manner in every detail, and to see that the work is thoroughly protected at all times.

The last part of this clause makes it possible to force the contractor to give an owner a dollar's worth of work for 50 or 25 cents. It plainly states that if the plans and specifications do not require a first-class job, he is to see that the work is done as the architect may direct. The unfairness of this clause is plainly evident.

The selections from general conditions of specifications quoted and commented on above are only a few of those used in a majority of specifications submitted by architects for bids, and later attached to contracts. Master fitters throughout the country, I have no doubt, can furnish others equally unfair. The responsible contracting master fitter has a proper right to object to signing contracts containing such conditions.

The writer has frequently discussed with architects the unfairness of conditions of specifications such as quoted herewith, and the reply usually made is that they (the architects) must make the general conditions so binding that the irresponsible or incompetent contractor cannot escape.

In other words, the master fitter who has striven for years to run his business honestly and fairly is put on a plane with the incompetent and dishonest contractor. It seems to the writer that a far better method on the part of the architect would be to discriminate in the invitations to bid between the competent and responsible and the incompetent and irresponsible contractor, by shutting out the latter from the bidding. The responsible master fitters throughout the country can contribute largely to this desired result by refusing to accept such unfair conditions of specifications. The man who has nothing to lose is always willing to take chances and to submit to any and all conditions imposed.

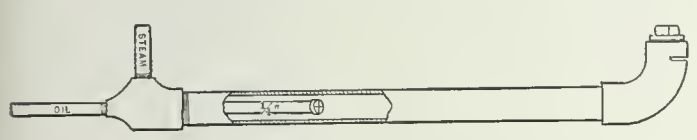
Specifications should be so carefully drawn as to fully describe just what the contractor will be required to furnish, and where this is not done the architect should

not be intrenched behind unfair general requirements which give him the power to force the contractor to give the owner work which his specification failed to describe.

The irresponsible contractor is attracted by such a specification, as by sharp practice he may be the winner, and he is usually willing to chance it. Itis the writer's opinion that the contractor who is willing to agree to any and all unfair conditions is a menace to the trade generally, and is a dangerous man for both the owner and his architect to tie fast to. No amount of watching will secure from him an honest job.

A Crude Oil or Tar Burner.

At the meetlng of the Pacific Coast Gas Association at San Jose, Cal., July 16-18, Charles Hughes contributed to the "wrinkle" department the description and sketch, presented herewith, of a burner for crude oil or tar: "It is constructed entirely of pipes and fittings, such as are found around all gas works and machine shops. The larger or outer pipe, being ¾ inch by 18 inches long, is screwed into a tee. Through the stralght opening of the tee, which is bushed down to required size, a ¼-inch pipe is screwed, whlch enters into the ¾-inch pipe about



A Crude Oil or Tar Burner.

6 inches, and is capped as shown in the drawing. The cap has an opening in the form of a cross, which is filed or sawed through the end to allow of the flow of oil. The large pipe carries on its furnace end an ell, plugged. A slot is filed or sawed of the proper size for the size of the flame deslred. The steam is admitted to the large or outside pipe through the side opening of the tee, as per drawing. The author of this drawlng has had excellent results from the use of this burner; in fact, much better than were obtained from some of the expensive burners on the market, the cost of the burner being comparatively nothing."

New York City Notes.

Thomas A. Barry, formerly of 217 West Broadway and who for the past two years has been in New Mexico for his health, dled at his late residence, 896 East 156th street, last Tuesday. The funeral services, which took place last Frlday, were attended by many members of the Master Plumbers' Association, of which Mr. Barry was a member.

* * *

In addition to the large amount of work that Milton Schnaier & Co. have on hand, they have found time to fit up a show window at their shop, 347 Columbus avenue, as a twentieth century bathroom. The exhibitlon is one of the finest of its kind ln the city.

* * *

The plumbing trade is well represented in the September Grand Jury for New York County, Thomas J. Cummins and George B. Brown being members.

* * *

The shop of Paul S. Bolger at 378 Park avenue is one of the busiest in the city at the present tlme. Mr. Bolger has the contract for the Mount Sinai Hospital at Fifth and Madlson avenues and 100th and 101st streets. There will be eight buildings in the plot and it is intended to be one of the finest hospitals ln the country. Mr. Bolger is also overhauling the entire plumbing in the Hoffman Arms at Madison avenue and Fifty-ninth street.

* * *

Trade still continues brisk among the majority of the plumbers and few capable journeymen are on the street. Material is scarce in some lines and this is causing delay on many jobs.

Heating and Plumbing Notes.

The Walker & Pratt Mfg. Company of 31-35 Union street, Boston, Mass., have just lssued a new catalogue devoted to the New Walker Boiler for hot water and steam heating. This boiler is of the horizontal, return flue, vertical sectional type of push nipple construction. The construction provides a substantial base for supporting the sections. The base contalns a grate of a labor saving type. An upper and lower crown sheet ls used in the construction to increase the heating surface exposed. The flues are so arranged as to secure a long fire travel and extract the principal heat from the gases. The Boilers are made with fire chambers 17, 22 and 32 inches wide, and ln 19 dlfferent sizes, varying in capacity for carrying from 400 to 3650 square feet of hot water surface.

The Pierce, Butler & Pierce Mfg. Company of Syracuse, N. Y., and 46 East Twentieth street, New York, are sending to the trade a very neat pamphlet devoted to the Florida and Tropic Boilers. After giving the guarantee and ratings, the Boilers are shown by means of general and broken views, so that an accurate idea of the construction and operation can be readily gained. The Florida Boilers are made for steam and the Tropic for hot water. The steam Boilers vary in capacity from 375 to 2100 square feet as surface burners, and from 200 to 1000 square feet as base burners. The water Boilers vary in capacity from 625 to 3550 square feet as surface burners, and from 325 to 2125 square feet as base burners.

The H. H. Dauphinee Company, Providence, R. I., have just completed the plumbing and steam heating in three houses for D. Bouchard, using Sunshine Boilers. They are also engaged on a number of other heating and plumbing contracts.

The Bridgeport Boiler & Pipe Covering Company, 54 Middle street, Brldgeport, Conn., are representatives of the H. W. Johns Mfg. Company, New York, and the Eastern Granite Roofing Company of New Jersey. They are engaged in furnishing and putting large quantlties of material on hot water and steam pipes and hot air pipes, as well as Frost Proof Covering to prevent freezing in plumbing systems.

The plumbing establlshment of J. M. Donovan, 6 Province street, Boston, Mass., was recently entered by thieves, who stole $100 worth of tools and materials.

An Interstate Conference of Master Plumbers and Sanitary Engineers was in session in Sydney, New South Wales, at the time of the dispatch of the last Australian mail. A draft constitution and by-laws had been adopted, several resolutions dealing with the question of materials and contracts were being discussed in committee and the association's labors appear to promise important results. The name of the new association is to be the National Association of Master Plumbers of Australasia, and its aims and objects will be largely identical with those of the American National Association of Master Plumbers.

A 60-page illustrated catalogue recently published by the Smooth-On Mfg. Company, Jersey City, N. J., is a very interesting and instructive book. It tells all about the different Smooth-On Cements, what Smooth-On is, how it is used, gives illustrations for its use and tells why it is valuable to the engineer, machinist, iron and steel founder, steam fitter and plumber.

A. C. Mosley of Westfield, Mass., has the contract for plumbing the Westfield Town Hall. Pearce & Cox of Boston have the contract for steam fitting.

Advices from Rock Island, Ill., report a valuable find of clay in the hills near Sears, in that State. The clay is known as seam mud, a light variety used in the manufacture of sanitary earthen ware. It is said to be comparatively rare. The only places in which it is found in quantities are Trenton, N. J., and Kokomo, Ind. The vein at Sears ls said to be 20 feet in thickness and only a few feet below the surface. The discovery, it ls believed, will lead to the founding of an important pottery industry in or near Rock Island.

The Cahill Iron Works, Chattanooga, Tenn., have completed an addition to their plant which they purpose to use for the manufacture of Enameled Bathtubs, Kitchen Sinks, &c.

Gibbons & Donohue have moved their plumbing shop to the new Viola Block on Ward street, Great Barrington, Mass.

The school controllers of Allegheny, Pa., have awarded the contract for heating and ventilating the new High School to McGinness, Smith & Co., Pittsburgh, Pa., at their bid of $42,377. The James Hay Company bid $41,300. The Board had employed W. K. McGinness as heating engineer, with the agreement that in case the contract was awarded to his house no charge would be made for his services in preparing the plans and specifications and superintending the installation of the plant. But in case the contract was awarded to another firm he was to be paid a commission of 5 per cent. on the cost of the job. If the contract had been awarded to the James Hay Company the cost to the Board would have been $43,365, while it was awarded to McGinness, Smith & Co., for practically $1000 less.

Quartermaster E. W. Hollyday, at Fort Caswell, N. C., will receive bids until September 30 for plumbing and electric wiring one field officers' quarters, two captains' quarters, one barrack, one mess hall and kitchen and one detached lavatory.

The City Council of Shreveport, La., has decided upon the construction of certain proposed sewers that will cost $97,000.

The Universal Sanitary Mfg. Company is the title of a new pottery in New Castle, Pa., the buildings for which are just completed. It is a local enterprise with $100,000 capital. The company have six kilns, and will make Sanitary Goods. New Castle is developing into a pottery town. The present pottery enterprises are all said to be backed by ample capital and seem to be under enterprising, intelligent management.

C. H. Smith of Athol, Mass., has opened a branch plumbing shop at Millers Falls.

Graves & Rockwood, heating contractors and plumbers, East Aurora, N. Y., are moving into more spacious quarters, where they will have a better opportunity to show their goods in a building next door to their old stand.

J. B. Carroll, 36 La Salle street, Chicago, is advising the trade by means of a huge postal card of the merits of the Hahn Acetylene Burner. The Hahn Burner is having a phenomenally large sale, which is due to the peculiar features of its construction, through which are secured very satisfactory results. The gas and air being brought together in proper proportion, there is no formation of carbon on the burner tips and maximum efficiency is thereby secured. The Burner is claimed to possess the greatest possible durability, having a strong metal frame and indestructible lava tips.

Kerwin Brothers, 101 South Pearl street, Albany, N. Y., inform us that they have been awarded the contract for new sanitary plumbing, with Opalite tiling in the bathrooms for the Governor's Executive Mansion in Albany, the job amounting to about $10,000. They also have the contract for plumbing School No. 12, which is said to be one of the largest and finest school buildings in the State.

Charles H. Carter of Waterford, N. Y., informs us that since his succession to the plumbing and heating business formerly carried on by Carter & Lund he has been kept busy with a number of desirable contracts.

The South Chester Pipe & Tube Company, Chester, Pa., are now rolling Pipe up to 12 inches in diameter. Heretofore the largest Pipe rolled was 10 inches in diameter.

The plumbing shop of Burke & Hill, 32 Prospect avenue, Buffalo, N. Y., was destroyed by fire on September 6.

The Supervising Architect at Washington, D. C., will receive bids until October 31 for the heating apparatus for the United States Post Office at Stockton, Cal.

New Firms and Changes.

The Elysian Supply Store Company have been incorporated in Hoboken, N. J., with a capital of $125,000, to manufacture Plumbers' Supplies, by Fred. A. Verdon, Thomas Crellin and Francis J. Verdon.

The Isaac P. Taggart Heating & Mfg. Company have been incorporated in Philadelphia, Pa., with a capital of $10,000, to deal in Heating Supplies.

The Hill-Anderson Plumbing Company have been incorporated at Columbus, Ohio, with a capital stock of $5000 by E. E. Hill, J. E. Hill, J. C. Anderson, A. E. Anderson and A. C. Makinzie.

American Manufactures in South Africa.

United States Consul-General James G. Stowe, at Cape Town, South Africa, in a recent report to the State Department, has this to say in respect of the importation of American goods into Cape Colony:

To make a list of all the articles of American manufacture sent here during the last four years would occupy many pages. They have, in the great majority of cases, been found efficient and durable. "That is another handy American trick," is a common saying. We cannot enter a home but what are seen some greatly appreciated American made articles. Our kitchen ware and furniture adorn many a home. The natives are astounded when they see light, strong and efficient American agricultural implements at work in the field. The American organ is a frequent sight, and scholars sit in the schools at neat and comfortable desks "made in America." American pews in the churches make poor services less tedious. The old and heavy English knives and axes are passing away, and the American hatchets and scientific axes are cutting the kindling wood for the home and hewing down the forests. Where six yoke of oxen were once seen pulling an 8-inch plow, our American plows with one yoke now do the work, and the day is fast disappearing when it takes from six to eight yoke to draw a wagon; one American wagon, carrying the same load, can be drawn with two yoke, or a good team of horses. Imitation American products are ever present, but there is always something about them, some little addition or change, that discloses their origin.

The Rochester Mechanics' Institute

The Mechanics' Institute of Rochester, N. Y., has favored us with a copy of the annual Circular of Information on the courses of instruction for the seventeenth year of the institution, which begin September 26, 1901, and close April 26, 1902. The institute is now housed in the new Eastman Building, the gift of George Eastman, which covers nearly an entire block and which was specially designed for the purpose of giving instruction in a variety of courses by day and evening classes, covering general education and practical subjects. The classes which are of special interest to our readers are mechanical drawing, steam engineering and electricity. There is also a department of domestic science and art for women. The cost of the instruction in the different courses is nominal and is not sufficient to bar any ambitious young person. The institution is equipped to do a valuable work and cannot fail to be of great benefit to those who avail themselves of its advantages. It is calculated to make its impress for the public good widely felt.

We have received with the compliments of Joseph T. Ryerson & Son, Chicago, Ill., a copy of a little pamphlet entitled "The Strange Story of Shan Dai, Pharaoh's Chief Boiler Maker." This story was written by R. R. Shuman, editor of the *Boiler Maker and Sheet Metal Worker*, and printed in that magazine in serial form. It is now published in pamphlet form in response to a large number of requests from those who have read it serially. The fanciful tale is written in an attractive manner, and its interest is hightened by a number of excellent illustrations of Egyptian scenes, which add to the verisimilitude of the story.

THE YOUNGSTOWN IRON & STEEL ROOFING COMPANY.

As noted in these columns last week, the new four-mill sheet plant of the Youngstown Iron & Steel Roofing Company at Youngstown, Ohio, was put in successful operation on Wednesday, September 4. The plant has been under erection since January of this year, at which time the Youngstown Iron & Steel Roofing Company decided to build a sheet mill, and for this purpose increased their capital stock to $300,000. After the consolidation of the sheet mills had been made the concern found some trouble in getting prompt deliveries of sheets, and after a careful study of the situation decided that their interests would best be served by having a mill of their own, which would insure them a steady supply of sheets and of the kind particularly adapted to their purposes.

The history of the roofing business shows that steel sheets for roofing purposes do not last as long as Iron, and for this reason the Youngstown Iron & Steel Roofing Company, when they determined to build a sheet mill, decided that they would make iron sheets, which are better adapted to their purposes and which they believe will last longer on the roof than steel. With this in view, the company placed contracts for two double puddling furnaces, a squeezer, bar mill and four sheet mills. The squeezer, bar mill and sheet mills were placed with the Braddock Machine & Mfg. Company, at Braddock, Pa., who made remarkably quick time in building and delivering the machinery. The main building is of steel construction, 300 feet long by 130 feet wide, and contains four hot mills, with accompanying roughing rolls, two cold mills, a sheet bar mill, two double puddling furnaces, squeezer, shears and other equipment. The building is commanded by a 40-ton electrical traveling crane, furnished by the Niles Tool Works Company of Hamilton, Ohio. The boiler plant contains two batteries of 600 horse-power each Sterling water tube boilers, also four Mehan waste heat boilers of 300 horse-power each. The machinery is electrically driven, power being furnished by a 150-kw. generator. The company have their own switch, giving them direct connection with the Erie, B. & O., Pennsylvania lines, Lake Shore and Pittsburgh & Lake Erie systems. It is the intention to also make a limited amount of steel sheets.

Sheet bars are received on their own tracks in 25 to 30 foot lengths and sheared, after which they are taken to the heating furnaces, reheated and rolled into sheets. The bar mill is not yet ready to start, but it is the intention of the company when it is running to break down their own billets into bars, believing by doing this they can get bars better adapted to their requirements. The company have also built a galvanizing plant and will furnish galvanized sheets of iron and steel, as well as black. It is contained in a building 150 x 60 feet and has modern equipment. The sheet mill is located on a site containing 7 acres of land, and foundations are already in for two more hot mills, which will be added in a short time. The concern have also about finished a new and very complete office building, which they expect to occupy in a short time. It is furnished with kitchen and dining room, the intention being to furnish meals to the employees. It has also toilet rooms and everything necessary for a first-class office building.

The business of the Youngstown Iron & Steel Roofing Company was established in Youngstown in 1894 in a small way, and has steadily grown since that time. About two years after the business was started the company took up the manufacture of metal lathing and bridge flooring, in which they have built up a very large trade. Two years ago the Youngstown Range & Stove Company were incorporated, the plant being located just beside that of the Roofing Company, the concern making a specialty of the manufacture of the Youngstown steel range, a high class range, for which they have had a large demand. The new sheet mill will supply the entire requirements of both the Youngstown Iron & Steel Roofing Company and the Youngstown Range & Stove Company, and will also allow the concern to be sellers of sheets in the open market. They have already entered a large number of orders and their surplus product for the balance of this year is practically under contract. Much of the success of these two concerns is due to John O. Pew, who has been general manager of both since their inception. Mr. Pew is thoroughly versed in the requirements of the roofing trade, and believes that by having control of the sheet mill and knowing the stock that is going into the sheets it is possible to furnish better roofing to the trade than ever before. The two concerns have the same officials, these being L. E. Cochran, president; G. M. McKelvy, vice-president; Mason Evans, secretary and treasurer, and John O. Pew, general manager.

Washington Charcoal Iron Tin Mills.

McClure & Co., dealers in tin plate and metals, whose offices and warehouses are located at 211, 213 and 215 Second avenue, Pittsburgh, Pa., with branch warehouse at 115 North Seventh street, Philadelphia, Pa., have recently purchased a large majority of the stock of the Washington Charcoal Iron Tin Mills, at Washington, Pa. McClure & Co. have always been stockholders in this concern, but desired a change in the management. They will continue to sell the entire output of the plant, which at the present time amounts to a daily output of 750 base boxes, and can assure the trade very much better service under the present management. It is the intention to double the capacity of the works in the very near future. New officials hve been elected, as follows: Thomas G. McClure, president; J. J. O'Connor, vice-president, and P. J. McNulty, secretary and treasurer.

Ratios of Tin Plate Sizes.

A book that will be of value and convenience to all who use tin plate has just been issued by the American Tin Plate Company, New York. It is entitled "Ratios of Squares and Odd Sizes of Tin Plate." The book, which is copyrighted, is 5½ x 10¼ inches in size, and has 30 pages of fine paper, and is well printed and bound with gilt edges in a black leather cover. The opening page is used to enumerate the variety of goods manufactured by the company, while the second page gives rules for using the various tables and explains the use of the ratios provided. Tables are also presented giving the United States standard gauge and weights for sheets, the standard weights and gauges of tin plates according to trade terms, and the net weight per box of tin on the basis of 112 sheets of 14 x 20, also of taggers tin and trunk iron.

By the use of the ratios with the tables, by dividing or multiplying the price or base price, the weight or base weight, with the number of boxes given, the equivalent number of base boxes, the ratio of sizes not given, the ratio of irregularly packed boxes or the ratio of extra long sheets can be readily determined. The book will be valuable for reference to all who use tin plates, as with its aid all required information regarding weights, sizes, &c., of tin plates can be readily obtained without delay.

The Youngstown Iron, Sheet & Tube Company.

Some time ago the Board of Directors of the Youngstown Iron, Sheet & Tube Company, at Youngstown, Ohio, decided to increase the capital stock from $1,000,000 to $2,000,000. The annual meeting of the stockholders of the company was held in Youngstown on Tuesday and they voted unanimously for the increase. It is probable that the additional capital will be used to build a large open hearth steel plant. Work on the buildings of the Youngstown Iron, Sheet & Tube Company at Hazelton is progressing rapidly, and the concern will be in the market in three or four months as makers of iron sheets and iron tubes. The old Board of Directors was re-elected, and George D. Wick was elected president and treasurer; James A. Campbell, vice-president and general manager; W. H. Foster, sec-

retary, and W. C. Reilly, auditor. W. H. Foster is a new official and was formerly with Myron R. Arms in the sheet business at Niles, Ohio.

FLASHINGS.

THE G. DROUVE COMPANY of Bridgeport, Conn., are doing the Galvanized Cornice work for St. Mary's Parochial School.

F. H. SNEATH, 54 Pratt street, Hartford, Conn., has been awarded the contract for placing Slate roofs on 17 buildings at Fort Mansfield, Napatree Point, R. I., for the United States Government. He also has a number of other large contracts.

M. H. G. GUNTHER, representing W. H. Mullins, Salem, Ohio, is spending a few days in the East and was a caller at *The Metal Worker* office this week.

JAMES E. KELLY & SON, Bridgeport, Conn., have recently completed some large contracts for Gravel Roofing, and are putting in a water tight cellar for John Boyle in New Britain.

THE LEFEBVRE ROOFING & CORNICE COMPANY of St. Paul, Minn., have filed amended articles of incorporation changing their name to the Lefebvre-Deslauriers Roofing & Cornice Company, and increasing the capital stock from $10,000 to $20,000.

THE claim that the Republic Iron & Steel Company, through their labor commissioner, James H. Nutt, had been asked by the Amalgamated Association to sign the scale for five years, is denied. It is probable, however, that when the time comes next year to arrange the wage scale the Republic Iron & Steel Company will ask that the Amalgamated Association make itself an incorporated body, in order that the contracts entered into between the two would have legal standing in a court of equity.

GEORGE D. EVANS, formerly manager of the Lisbon Works of the American Tin Plate Company, Lisbon, Ohio, has resigned to become manager of the new mill being built by the Carnahan Tin Plate & Sheet Company at Canton, Ohio.

THE CARNEGIE SHEET IRON COMPANY have been granted a charter with a nominal capital of $1000. The new concern are building a two-mill sheet plant at Carnegie, near Pittsburgh, and are an identified interest of the Carnegie Tube Company, which concern are building a tube mill at Carnegie.

A VERY handsomely printed pamphlet containing a series of photo-engravings of their different Sheet mills has been issued by the American Sheet Steel Company, whose headquarters are at the Battery Park Building, New York. The series includes Vandergrift, Bridgeport, Ohio, McKeesport, Scottdale, Niles, Piqua, Cambridge, Leechburg, Wellsville, Chester, West Virginia, Struthers, New Philadelphia, Scottdale, Canal Dover, Muncie, Canton and others. Facing each page of works photographs is a picture illustrating the different steps in the manufacture of Sheets from the steel to the shipping warehouse. A number of tables of weights, net prices of Galvanized Sheets, &c., are added.

THE STANDARD IRON & STEEL COMPANY have been organized by Pittsburgh and New Castle capitalists, and propose to build a mill at New Castle for rolling refined Iron Bars and Iron Sheets. The new plan will contain 10 or 15 double puddling furnaces, heating and refining furnaces, a 12-inch mill and two hammers. The Sheet mill is to contain six hot mills and two cold mills. The output of the prospective concern is given as from 60 to 75 tons a day.

IT is possible that the Monongahela Works of the American Tin Plate Company, on the South Side, Pittsburgh, which now contain 14 mills, may be reduced to eight when the plant is started up. The Monongahela Works is badly crowded for room, and may eventually be removed to some other more favorable location.

FOLLOWING upon a rumor to the effect that the Cambridge plant of the American Tin Plate Company would be dismantled, a report was circulated to the effect that A. W. Brown, who was formerly president of the Cambridge Iron & Steel Company and until recently vice-president of the American Sheet Steel Company, would build a new mill to supplant it. We are advised by Mr. Brown that such statements are absolutely untrue, as he has no intention of building either Tin or Sheet mill.

W. A. PORTER, who has been secretary and treasurer of the E. W. Bliss Company of Brooklyn, N. Y., has just been elected vice-president of the company. H. C. Seaman is secretary and L. H. Gould treasurer.

THE ALCANIA COMPANY of Pittsburgh, Pa., who for the past two years have been operating a two-mill Tin Plate plant at Avonmore, Pa., have been incorporated with a capital stock of $250,000. The incorporators are: W. H. R. Hilliard, Arthur C. Fording, William C. Weichsel, Mahlon M. Garland and Oliver Wylie. It is understood that the company contemplate an extension of their plant.

THE CONNEAUT CAN COMPANY of Conneaut, Ohio, have been incorporated with a capital stock of $50,000, for the purpose of erecting a Tin Can and Stamping plant. Z. H. Thompson, H. A. Truesdell, O. C. Lillie, A. J. Packerd and A. C. Andrews are the incorporators.

THE CARNAHAN TIN PLATE & SHEET COMPANY, Canton, Ohio, have notified the trade that they will have six mills in operation about November 1. The company propose to manufacture high grade Iron and Steel Sheets in Terne Plates.

THE E. W. BLISS COMPANY, Brooklyn, N. Y., are sending out a 24-page illustrated catalogue of their Drop Hammers and Trimming Presses. One of the opening pages contains information regarding the special points of superiority embodied in their Stiles Drop Hammers. A number of styles of these Hammers, suitable for varied purposes, are illustrated and described, tables being given showing the different parts of the machine, with their weights and sizes. The Hammers are made in weights from 50 to 2000 pounds. The Bliss Cornice Makers' Drop Press is especially mentioned. These Presses are designed for stamping or embossing and paneling large sheets such as are used by metallic cornice and ceiling makers. The Bliss Straight Sided Trimming Presses are also given notice in the catalogue, together with a few other specialties made by the concern.

A Struggle with the English Language

The struggles of foreigners who attempt to write business letters in English have often been the subject of humorous comment. An example of such a letter, which indicates that the writer has been endeavoring to frame his ideas in English by the aid of a lexicon, has recently been received by George M. Clark & Co., Chicago. Omitting the name and address of the writer, the letter is as follows:

"*Sirs.*—I passed your honorable letter of 1st inst. and catalogue. Undoubtedly there may been possibly any business here what could grow important and successively.

"But before it shall been necessary to show here any of your best and most usually apparatus for your account. You may reflect this observation, and write me your opinion up the subject.

"Please inform you up my person by the ———— Company, New York."

The employment of oil fuel is increasing rapidly in California and Texas. In San Francisco a number of manufacturing and other concerns have recently equipped their boilers for the use of oil. Among these may be instanced the San Francisco *Chronicle*, which has just introduced an oil plant for generating steam in its boilers. The result has been to do away with the black smoke and soot which poured from the chimney of the plant when soft coal was used. It is purposed now to establish in San Francisco a number of large tanks in which quantities of oil can be stored, to be drawn upon as desired by those who are using it for fuel purposes. A great recommendation of oil fuel, apart from its cleanliness, is that it is claimed to produce energy at a lower cost than coal.

The Steel Strike.

The steel strike still "drags its slow length along" without indication of immediate settlement, notwithstanding that at the meeting of the General Executive Committee of the Amalgamated Association held in Pittsburgh on Saturday and Monday, the committee by a unanimous vote instructed President Shaffer and the Advisory Board to end the strike on the terms proposed by C. M. Schwab, president of the United States Steel Corporation, to the committee of labor leaders which conferred with him in New York last week. The terms of the proposition made by Mr. Schwab to this committee and under which the General Executive Committee ordered President Shaffer to end the strike, are as follows.

American Tin Plate Company—Will proceed under scale signed last year, except Star, Crescent, Banfield, Monessen and Demmler mills, which are now running and will continue to run nonunion.

American Steel Hoop Company—Will sign for all mills signed for last year.

American Sheet Steel Company—Will sign for all mills signed for last year, except Old Meadow, Saltsburg, Hyde Park, Canal Dover and Cambridge.

With reference to our nonunion mills we will make no conditions with the Amalgamated Association, except giving the assurance that it is our intention to pay as high general wages in our nonunion as in our union mills.

For some reason President Shaffer has so far refused to order the men back to work, claiming that to do so would be equivalent to a surrender on the part of the Amalgamated Association.

At the meeting on Monday President Shaffer stated to the members of the Executive Committee that if they were dissatisfied with his course in the strike, and if they thought a settlement would be hastened by his resignation, he would resign his position at once. President Shaffer was assured that if he tendered his resignation it would be accepted. There is no denying the fact that great dissatisfaction exists among the officials and the men of the Amalgamated Association over the course pursued by President Shaffer during the strike, and it is probable his connection with the association will be terminated in a short time. He has acted repeatedly against the advices of the Advisory Board, while the men who went out on strike have been hoping for weeks that it would be declared off and they could go back to work. President Shaffer has held out promises that if the men would stand out for another week or two they would win the fight and all would secure their old positions. This had the effect of renewing the courage of the men, but at the same time the United States Steel Corporation were proceeding steadily in the starting up of their idle mills, and as fast as a mill has been started it has been taken from the union list and placed among nonunion mills, to be operated in that manner always hereafter. Even should the strike be declared off and the United States Steel Corporation through their constituent companies sign the scale for their idle mills which were signed for last year, the Amalgamated Association, by reason of losing so many mills, will have been weakened very seriously, and it will be many years before the association will be as strong as it was before the strike was ordered, if it ever gets that strong in membership again. The officials see now that the strike was a mistake and are anxious to rectify it as far as possible, but President Shaffer is stubborn and refuses to call the strike off.

THE TIN PLATE MILLS.

The American Tin Plate Company are making good progress in getting their idle tin mills started, and this week steps were taken to put the Monongahela Works, an eight-mill plant in Pittsburgh, in operation. A number of men from the Star and Monessen mills have been sent to the Monongahela Works, and the mill will start off with a very large number of skilled men at work. The Star, Demmler, Crescent, Monessen and Banfield mills, it is understood, will all be running to full capacity within a week. At the Demmler Works of the American Tin Plate Company the following notice was posted Tuesday evening:

The present and former employees of the United States Works of the American Tin Plate Company are referred to the official statement of the company in the press August 27, as follows:

"The American Tin Plate Company deny that there are any negotiations on foot looking for a settlement of the strike, and authorize the statement that mills put into operation during the strike will be continued nonunion and all men going to work now will be retained in their positions."

The employees of this mill are hereby officially notified that this applies directly to the United States Works at Demmler, Pa., and that anything that has occurred or may occur in the future cannot affect the operation of this plant on a strictly nonunion basis. John R. Phillips, district manager; J. K. Lauck, superintendent; M. M. Leeds, third vice-president.

After the Monongahela Works are running full, the next tin plants to be started will be the Pittsburgh and Pennsylvania works, at New Kensington, about 20 miles from Pittsburgh.

THE SHEET MILLS.

The American Sheet Steel Company have in full operation more than 60 per cent. of their total number of sheet mills, and the list is steadily growing. The Reeves Works, at Canal Dover, is running practically full. It is probable one or two other works, among them the Wood plant at McKeesport, will be started within a short time.

THE TUBE MILLS.

The first violence in the tube mills was committed at the National Tube Works on Tuesday evening, when two men at the plant were assaulted and seriously injured. From 400 to 500 men are working at the National Tube plant, and hundreds of others would go to work but are afraid to do so. The National Tube Company have taken steps to institute injunction proceedings to prevent the McKeesport strikers from interfering with the operation of the National Works. The Pennsylvania and Continental tube works in Pittsburgh and the Riverside works at Wheeling are still idle, with the exception of a few departments. It is probable that a determined effort will be made to get the National Tube Works running full, and after this is done the other three idle plants will be started. The men who are idle and who see their positions being taken by other men are hoping that they will be ordered to go to work before this week is out.

The strike is in that condition that it may be called off any minute.

Geo. Callahan & Co., 218 Front street, New York, report increased sales of their pipe joint cement, roof cement and elastic paint oil. The increased sale of their paint oil, they state, proves that they have a good article, as the declining price of linseed has not diminished the volume of their business in this commodity, as might be expected. The sales, on the contrary, they claim to show a constant increase, regardless of the price of linseed oil. The reason for this they assume to be that their customers have discovered that paint made with their oil possesses exceptional elasticity and durability, the latter quality being especially noticeable when the paint is used for roofs that have to be walked over. The concern refer to their stove putties and enamels and furnace cements as containing no petroleum oil, and claim for their paste cements that they are made of materials that have a holding and durable quality, the oils used in every composition being quite different from the mixtures of petroleum that are put in cheaper cements.

An Australian correspondent, writing from Melbourne, under recent date, says that American goods continue to bid for the Australian market, but it is a fact that the trade latterly is no more than holding its own. It is certainly not increasing to any extent. American agents in Australia do not seem to be hustling so keenly after trade as hitherto, possibly awaiting tariff developments, and American ranges, stoves, grills, &c., he says, are losing ground. In plumbing goods, such as baths and sanitary fittings, American manufacturers are gaining a hold, but the efforts in the line of pushing this trade are spasmodic instead of persistent.

THE LETTER BOX.

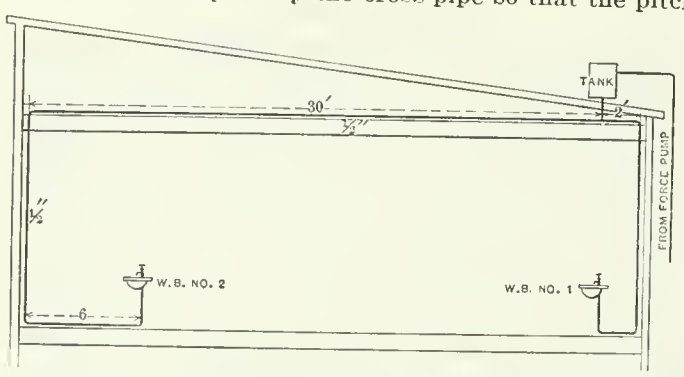
Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

PITCH PIPE UP TO TANK.

From J. S. C., Goldsboro, N. C.—When a job of plumbing is piped, as in the plan shown herewith, we find that water runs all right at basin No. 1, but not at No. 2 if the tank is emptied and then refilled unless the air is sucked out of the pipe. Then it will start to run again. We want to change the piping so that this trouble will be avoided, and would like to know what causes the trouble and how to apply a remedy.

Answer.—The pipe which runs over to the service pipe to No. 2 seems to be air bound. The long run of 30 feet has probably been made without any thought of providing a pitch from the drop end to the tank so that the air in the pipe can escape as the water runs in. So it is trapped, and after the pipes partially fill the air stops the flow when the pressure is only the few pounds due to the hight of the tank. The air causes the trouble, and it is only necessary to lay the cross pipe so that the pitch



Pitch Pipe Up to Tank.

up to the tank will be preserved throughout its full length to allow the air to escape as the pipe fills up. Then the tank can be emptied and refilled without interfering with the flow at the basin No. 2.

PUTTING ON STANDING SEAM ROOF.

From T. S. C.—We shall be glad to have *The Metal Worker* inform us if there is more than one method of putting on a standing seam tin roof, and which is considered the better way.

Note.—Standing seam roofs are put on so that the finished seam stands from ¾ to 1 inch high. This is done by both hand tools and machine tools. There are some who consider that the use of hand tools is better. So far as turning the edges of the sheets is concerned, if this is done uniformly one method is as good as the other. The locking of the two edges on adjoining sheets together at the top is done both by hand tools and machine tools called seamers, and if the work is carefully done there is little choice between the two methods, it being held by those who favor the hand process that the lock can be made much tighter when a mallet and the hand seamer are used. However, as there is no occasion for these seams to be water proof in a roof that has a proper pitch and is properly connected with the gutter, this is of little importance. The greater proportion of the standing seam tin roofs on buildings are put on with machine tools and give satisfactory service. Owing to the great saving of time effected by the use of machine tools, few use the hand tools, except where the roof is so steep that the machines cannot be used.

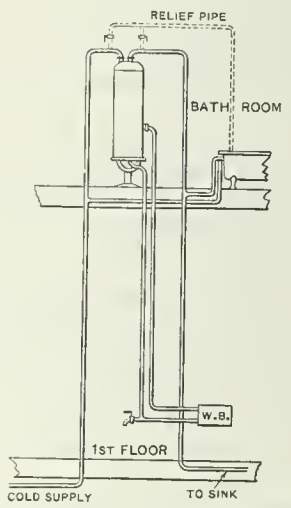
WHO MAKES THE NASH VENTILATOR?

From G. D. S., Philadelphia.—In answer to the inquiry of "C. S. M.," New Haven, Conn., in *The Metal Worker* of August 31, I would state that the Nash ventilator is made by the patentee, William Nash, 1920 Mount Vernon street, Philadelphia, Pa.

WILL BOILER IN BATHROOM CIRCULATE?

From E. B. M., Grant, Pa.—Please inform me if I can place a boiler in a bathroom over the kitchen and connect it with the range so that there will be good circulation if the piping is arranged as shown in the sketch herewith.

Answer.—There is nothing in the piping as shown that should interfere with the operation, unless it be the dip in the hot and cold service pipes at the top of the boiler. Air might collect there and stop the flow



Will Boiler in Bathroom Circulate?

unless a small air relief pipe with cocks, as shown by dotted lines, was arranged to allow the air to escape. If there is a strong street pressure this may not be needed, and it could be added at any time if required. The end should be led to discharge over the bathtub or some other fixture, so that any water that may come with the escaping air would create no annoyance. Boilers have been placed in bathrooms quite frequently, in order to gain space in the kitchen. They afford a comfortable warmth in the bathroom in winter, but the effect is not so desirable in summer.

RED PEPPER FOR RED ANTS.

From C. B. B., Palm Beach, Fla.—Will some one please tell me how to get rid of ants? They are small red ants about ⅛ inch long, and so far I have been unable to find anything that would drive them away.

Note.—Probably some of our readers can suggest a remedy. In the meantime, we would suggest that the places where the ants haunt be sprinkled with snuff or red pepper. Another method is to set a greasy plate where the ants run so that they will be caught in the grease, when they can be disposed of by scalding.

SHOULD A NEW TIN ROOF BE LAID OVER AN OLD ONE?

From W. & Y., Michigan.—We would like to hear from the readers of *The Metal Worker* in regard to placing a new tin roof over an old one. Is it better to put a new tin roof over the old one, provided the new tin is painted on the under side; or is it better to take off the old roof and put on a new tin roof without painting on the under side?

ADDRESS WANTED.

P. W., P. O. Box 992, is requested to send name and address that we may communicate with him for further information relating to water heater.

The Knecht Brothers Company, Cincinnati, Ohio, are sending out a pamphlet devoted to their friction sensitive drill, which will be interesting to those who have use for a drill press in their shops. A cut gives a good idea of the construction and a detailed description furnishes full information in reference to the apparatus and its use. The catalogue also gives a number of testimonial letters from those who have used these drills with satisfactory results.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is about ¼c. lower, with better demand for futures.

Copper is dull and unchanged.

Pig Lead is quiet and without change.

Spelter rules dull and weak.

Hallett's Antimony is a shade lower.

Nickel is firm and unchanged.

Aluminum continues in good demand at former prices.

Tin Plates are still very scarce, with prices nominal.

Black and Galvanized Sheets are also scarce, and jobbers' prices are higher.

Patent Planished Sheets have been marked up 1c. a lb.

Russia Iron Sheets are ½c. higher.

Old Metals are dull and unchanged in price.

Sheet Copper is moving in good volume, and is firm in price.

Foundry Pig Iron is more active and firmer in tone.

Hardware is moving in excellent volume, and prices are firm in nearly all lines.

Wrought Iron Pipe is scarce, and prices are strong, but without further change.

Plumbers' Brass Goods are in active demand; prices were reaffirmed by manufacturers.

Cesspools, in new list, show advance in price.

Plumbers' Wood Work is firm, with higher tendency in prices.

Oilers are about 10 per cent. higher.

Wire Nails are in good demand at unchanged prices.

Cut Nails are somewhat irregular in price, but in fair demand.

Wire is still in heavy demand and firm in price.

Window Glass prices are unchanged.

White Lead is unchanged.

Linseed Oil is more active and stronger.

Spirits Turpentine is firm in price and in fair demand.

METAL MARKET.

NEW YORK, September 13, 1901.

Pig Tin.—The market for Pig Tin declined during the week until Thursday, the most noticeable feature being the entire disappearance of the premium on spot. Owing to the fact that the demand throughout the country runs more heavily in the direction of future deliveries spot metal is holding a relatively weak position. The increase in the volume of business done in futures during the week was marked, serving to renew the strength of the market toward its close, when prices began to react in an upward direction, closing firm at about ¼c. below the figures given in our last report. Small lots of Straits Pig rule at 26¾c. to 27c. per lb.

Copper.—No special change has been developed in regard to this metal. Some considerable transactions are reported to have been consummated during the week at prices which ruled below the current market rates. A subject which has created considerable discussion in the trade this week is a statement put forth by a leading Copper broker in New York City to the effect that one of the largest Copper selling interests had accumulated something like 135,000,000 lbs. of metal, due to the decrease in the home consumption and in exports. Buying is still on a conservative scale, and it is likely that consumers will continue to purchase sparingly while prices remain on what is generally considered to be too high a level. Meanwhile, retail prices show no change. Small lots of Lake Ingot continue to be quoted at 17¼c. to 17½c. per lb., and Casting Copper at 16¾c. to 17c.

Sheet Copper.—The demand for Sheet Copper continues in satisfactory volume. The mills are said to be well supplied with orders for early deliveries. Consumers, however, are not buying much ahead. The consumption of Sheet Copper this season appears to be considerably ahead of that of former years. A good deal of material is going into structural work in the shape of Cornices, Tiles, &c. Prices remain firm on the basis of 21c. per lb. from store.

Pig Lead.—No change of any kind has taken place in this market. Business is quiet and small lots of American Pig are quoted at 4.60c. to 4.62½c. per lb. St. Louis reports that a normal demand for Pig Lead prevails in that market, prices ruling about the same as a week ago.

Spelter.—This metal is dull and prices without change. Good Western brands, in small lots, are quoted at 4.45c. to 4.50c. per lb. St. Louis advices indicate a better demand for Spelter, orders being for larger quantities and prices somewhat higher.

Sheet Zinc.—Jobbers quote Sheet Zinc in 600-lb. cask lots at 6¾c. per lb., and smaller quantities at 7c. The demand is of ordinary type, and the article shows no change in any respect.

Antimony.—Prices are a shade easier, and the demand is of normal proportions. Hallett's is quoted at 8½c. to 9¼c. per lb., and Cookson's at 10½c. to 11c. in small parcels.

Nickel.—This metal chows no change. Prices are still firm, small lots being quoted at 60c. to 65c. per lb.

Aluminum.—Unchanged prices and an active demand are the features of the market for this metal. No. 1 Ingot, guaranteed 99 per cent. pure, is quoted in small lots at 37c. per lb., and in 100-lb. lots at 35c.

Tin Plates.—The market for Tin Plates remains in just about the same position as outlined in our last report. The available supplies of Plates are still extremely light, and in some cases, such as Coke Squares of the more popular sizes, there is an actual famine. Consumers, in many instances, are obliged to buy Plates of heavier gauge and better finish than they would ordinarily use for their purposes. But where there is immediate necessity they are glad to get whatever they can pick up and to pay any price for the same. Under the circumstances buyers are naturally taking nothing beyond what absolute necessity dictates; consequently the volume of transactions during the week has been comparatively small. As the American Tin Plate Company have succeeded in resuming operations in some of their mills consumers are looking for some relief, but unless a very much larger number of mills than have already been started are put into operation at an early date the market will be practically unaffected, as all the material that is being turned out is already appropriated by the larger consumers, and it will take months after the resumption of the mills before the company can put any material on the open market. Prices are purely nominal. American Bessemer Coke Plates IC, 14 x 20, are selling in small lots at New York and corresponding points anywhere from $7 to $8 per box.

Sheets.—Notwithstanding that a number of the American Sheet Steel Company's mills are in operation, the situation as regards the supply of Sheets shows no signs of improvement. Both Black and Galvanized Sheets are still as hard to get and bring as high prices as ever. There is no abatement in the scarcity, and prices are almost anything that is asked, provided deliveries can be made within a reasonable time. Jobbers' prices in New York are ruling nearly 10c. per 100 lbs. higher than a week ago. No. 27 One Pass Cold Rolled Soft Steel Sheets in small lots (which is the only way in which they can be bought) rule at about 4.20c., and Galvanized Sheets

at 60 per cent. off the list. Patent Planished Sheets are especially scarce and jobbers are asking about 1c. advance over last week's prices, the A quality ruling at 12c. and the B quality at 11c. per lb. There has been quite a run on the available stocks of Genuine Russia Iron, with the result that prices on that commodity have risen about ½c. per lb., ruling at 11c. to 11½c.

Chicago advices are as follows: Large buyers with heavy unfilled contracts report that they are receiving less than half of the quantity of Sheets due them. This shows how much business is being restricted by the strike in the Sheet mills. The quantity received from the mills is so small that the consuming trade is constantly kept in a state of aggravation. Jobbers are unable to accumulate their usual assortment of sizes and prices depend on the disposition of the seller or the character of the buyer. Black Sheets may be quoted at 4c. to 4.25c. for No. 27, but it is impossible to secure some sizes at any figure. Galvanized Sheets are quotable at 60 and 5 to 65, but it is also extremely difficult to get some sizes.

Old Metals.—A slightly better movement is noted in Scrap Iron, but other Old Metals are dull, and prices have not quotably varied. Dealers are paying about the following for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 14½c.
Light and Tinned Copper	per lb. 12½c.
Heavy Brass	per lb. 9 c.
Light Brass	per lb. 7½c.
Lead	per lb. 4 c.
Tea Lead	per lb. 3¼c.
Zinc	per lb. 2¾c.
No. 1 Pewter	per lb. 18½c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	$8.00
Wrought Iron Scrap, per gross ton	$10.50 to 11.00
Heavy Cast Scrap, per gross ton	10.00 to 10.25
Stove Plate Scrap, per gross ton	6.75 to 7.00
Burnt Iron, per gross ton	5.00 to 5.50

THE PIG IRON MARKET.

CHICAGO.—Transactions are steadily growing more numerous. The business of the past week was considerably greater than that of the preceding week, and some commission houses report their trade now approaching something like genuine activity. Inquiries are being received for Foundry Iron, calling for much larger quantities than buyers have lately been taking, which shows more confidence in the future. The local foundrymen are beginning to purchase Iron to some extent, but the great bulk of buying has so far come from establishments outside of the city. Strong Foundry Iron running low in phosphorus is very scarce and in good demand. The local furnaces are absolutely without stocks and their product is sold far into the future. Southern furnace companies report small stocks on hand and a better demand from other centers of consumption, and intimations are given of a possible early advance of perhaps 50c. a ton. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon	14.90 to 15.15
Southern Coke, No. 1	14.65 to 14.90
Southern Coke, No. 2	14.15 to 14.40
Southern Coke, No. 3	13.65 to 13.90
Southern Coke, No. 1 Soft	14.90 to 15.15
Southern Coke, No. 2 Soft	14.15 to 14.40

PHILADELPHIA.—During the past week an active demand for Pig Iron was in evidence, and some very satisfactory sales were made. The general tendency has been toward a larger business, and in many cases at better prices, but not enough so to warrant any general revision of quotations. The scarcity of Iron at most of the Eastern furnaces precludes the expectation of increased stocks, but how far that will be offset in other districts is what the trade are anxious to find out. Prices for city and nearby delivery are about as follows, and from 25c. to 50c. less at points within a radius of 100 miles, South or West: No. 1 X Foundry, $15.50 to $16; No. 2 X Foundry, $14.75 to $15.25; No. 2 Plain, $14.25 to $14.75.

PITTSBURGH.—Foundry Iron continues quiet, and prices are weak. We quote Bessemer at $15.75 to $16, and No. 2 Foundry at $14 to $14.25, f.o.b. Pittsburgh. Reports are that even lower prices have been made.

CINCINNATI.—There has been a fair normal run of business the past week, quite a few 1000-ton orders have been booked, and the number of 300 to 500 ton sales have added considerable to the total tonnage. Most of the buying has been in Foundry grades, the greater portion being for this year's delivery, though most of the larger orders were for the first half of 1902. Prices are gradually stiffening, and it is not believed that there are any offerings whatever than the minimum figure given here. The outlook is for a fair steady trade with hardening price. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$13.50 to $13.75
Southern Coke, No. 2	13.00 to 13.25
Southern Coke, No. 3	12.50 to 12.75
Southern Coke, No. 4	12.00 to 12.25
Southern Coke, No. 1 Soft	13.50 to 13.75
Southern Coke, No. 2 Soft	13.00 to 13.25
Southern Coke, Gray Forge	12.00 to 12.25
Southern Coke, Mottled	12.00 to 12.25
Ohio Silvery, No. 1	15.00 to 15.50
Ohio Silvery, No. 2	14.50 to 15.00
Lake Superior Coke, No. 1	14.50 to 15.00
Lake Superior Coke, No. 2	14.00 to 14.50
Lake Superior Coke, No. 3	13.50 to 14.00

ST. LOUIS.—While the demand for Pig Iron has not materially increased inquiries are good, conditions are considered favorable, and every indication points to an active market in the near future. Furnaces have made no changes in prices. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry	$14.25 to $14.50
Southern, No. 2 Foundry	13.50 to 13.75
Southern, No. 3 Foundry	13.00 to 13.25
Southern, No. 4 Foundry	12.50 to 12.75
No. 1 Soft	14.00 to 14.25
No. 2 Soft	13.50 to 13.75

CHICAGO REPORT.

Scrap Iron and Steel.—The demand is better, and prices are beginning to move upward. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap	$11.00 to $12.00
Machinery Cast	10.00 to 10.50
Malleable Cast	10.00 to 11.00
Stove Plate (free from burnt)	7.00 to 7.50
Burnt Iron and Grate Bars	5.50 to 6.00
Sheet Iron and Hoops	6.00 to 7.00
Plow Steel	9.00 to 10.00
Breaking Stock	9.00 to ....
No. 2, such as Shovels, Hoes, &c	.... to 7.00
Old Boilers—whole (Iron)	6.00 to 7.00
Old Boilers (Iron) cut in single Sheets and Rings	9.50 to 10.00
Old Gas Pipe and Boiler Tubes	10.50 to 11.00
Cast Borings	4.00 to 4.25
Turnings	9.50 to 10.00
Horseshoes	12.00 to 12.50

Old Metals.—A modeate movement is reported with values steady. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	14¾c.
Copper Bottoms	13¼c.
Copper Clips	14¼c.
Red Brass	13⅜c.
Yellow Brass	9½c.
Red Brass Borings	11½c.
Yellow Brass Borings	8¾c.
Light Brass	7¾c.
Pipe Lead	4 c.
Tea Lead	3½c.
Zinc	2⅝c.
Pewter, No. 1	19 c.
Pewter, No. 2	10 c.

Old Rubber.—The tendency of values is downward at present. Dealers' buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$23.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7½c.
Rubber Car Springs	....	4¾c.
Inside Bicycle Tubing	....	21 c.
Oustide Tubing	....	7¼c.
Black Rubber	....	4¼c.
White Rubber	....	8½c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—The demand is much stronger. Stocks are low, especially of Stove and Chestnut sizes. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo	8.25	8.50

THE HARDWARE TRADE.

The volume of business is excellent and both jobbers and retailers are covering their wants in nearly all lines with liberal orders. Most of the larger trade have already purchased goods for the season's business and are buying now to complete, or perhaps replenish in some cases, their stocks. The delay on the part of the manufacturers in making shipments causes a good deal of correspondence, and in some lines serious inconvenience is occasioned by the scarcity of goods. This is the case especially in Tin Plates and Sheets and goods in the manufacture of which these products are used. In many other lines, however, the difficulty of obtaining raw material is delaying the output of goods. The stocks of Heavy Hardware in the hands of manufacturers and jobbers are generally light. Prices as a rule are decidedly firm, especially in heavy goods. The effect of the strike in interfering with the operation of the mills is felt in several directions in giving a temporary strength to the market and causing higher prices for the time being. In lines in which there is a decided scarcity, as, for example, Wrought Pipe, those who have stocks on hand are advancing prices and reaping good profits. With the indications of a speedy termination of the Steel strike, and with the good news of the President's steady and rapid recovery, the market is regaining the confident tone which was for a time disturbed by the attempted assassination, and the prospect of an active and satisfactory fall business is excellent.

NOTES ON PRICES.

Plumbers' Brass Goods.—At the meeting of the Plumbers' Brass Goods Association, which was held in Detroit, Mich., on September 6, the present prices were reaffirmed. The impression that a further advance would be made at this meeting was proved erroneous. It is considered unlikely that the Brass Goods manufacturers will elevate prices above the present level, where they will probably remain at least during the balance of the year. It is unlikely that any recession will occur, as the demand for Brass Goods continues heavy and the manufacturers are all well filled up with orders, and in most cases are behind with their shipments. The market for Brass Goods may be described as decidedly firm.

Plumbers' Wood Work.—Notwithstanding the fact that the Wood Work branch of the Plumbing Supply trade is reputed to be overrun with manufacturers, yet it is a matter of common knowledge that the supply of Plumbers' Wood Work is quite inadequate to the demand made upon it by the trade this season. All of the manufacturers are said to be greatly behind on their orders, and jobbers who at the present time are carrying a good stock of this class of goods are reaping handsome returns from their sales. No orders are being taken at the prices prevailing a few months ago, and any change that is likely to occur will be pretty sure to show a material advance. This fact is due entirely to the unusually heavy demand existing for goods for prompt shipment.

Cesspools.—A new price-list for Hydrant Cesspools and Cesspool Bell Traps of all kinds has just been issued by the Central Foundry Company of New York. The lists are to be found in the new catalogue and price-list issued by this concern. As the Central Foundry Company are the controlling factor in the manufacture of Plumbers' Cast Iron Goods, the new list will undoubtedly be adopted by all other foundries making this class of goods. The changes in the lists are so radical that it is desirable that immediate attention should be called to them. Heretofore Cesspools were never listed without the Inverted Bells being included in the price. The new list, however, shows separate lists for Plain Cesspools and for the Cesspools with the Bell Traps included. Another feature of the list is the inclusion of prices for Galvanized Cesspools and Stable Grates. The new prices are as follows:

Hydrant Cesspools.

Size.	Plain.	Galvanized.
10 x 10 x 6 inches deep	$0.90	$1.40
12 x 12 x 6 " "	1.00	1.50
14 x 14 x 6 " "	1.15	1.75
16 x 16 x 6 " "	1.30	1.95
18 x 18 x 6 " "	1.60	2.50

Hydrant Cesspools, with Bell Trap.

Size.	Plain.	Galvanized.
10 x 10 x 6 inches deep	$1.40	$2.10
12 x 12 x 6 " "	1.50	2.25
14 x 14 x 6 " "	1.65	2.50
16 x 16 x 6 " "	1.80	2.75
18 x 18 x 6 " "	2.10	3.25

All have 2-inch Bottom Outlets.

Plain Cesspools.

Size.	Standard.	Extra heavy.
6 x 6 inches, with 2-inch outlet	$0.75	$1.25
9 x 9 " " 3-inch "	1.00	1.50
9½ x 9½ " " 4-inch "	1.25	2.00
10 x 10 " " 4-inch "	1.50	2.75
12 x 12 " " 4-inch "	2.00	3.25
13 x 13 " " 4-inch "	2.50	3.75
14 x 14 " " 4-inch "	2.75	4.00

Plain Cesspools, with Bell Trap and Hinged Strainer.

Size.	Standard.	Extra heavy.
6 x 6 inches, with 2-inch outlet	$1.00	$1.50
8 x 8 " " 3-inch "	1.25	1.75
9 x 9 " " 3-inch "	1.35	1.85
9½ x 9½ " " 4-inch "	1.60	2.25
10 x 10 " " 4-inch "	2.00	3.00
12 x 12 " " 4-inch "	2.50	3.50
13 x 13 " " 4-inch "	3.00	4.25
13 x 13 " " 5-inch "	3.50	4.75

Large Cesspools, with Bell Trap and Grating.

Size.	Painted.	Galvanized.
12 x 12 x 10 inches deep	$3.75	$7.50
12 x 15 x 10 " "	4.00	8.00
15 x 15 x 10 " "	4.25	9.00
16 x 16 x 10 " "	4.50	10.00
18 x 18 x 10 " "	10.00	20.00

Stench Traps.

Size.	Painted.
6 x 6 inches, with 2-inch outlet	$1.00

Registers, Ventilators, &c.—As noted in our last report, a new and thoroughly revised list, bearin date September 2, has been adopted by several of the leading manufacturers of Hot Air Registers, Ventilators, &c. An important change, and one which serves the convenience of the trade, is in making the different finishes of Registers subject to a uniform discount. This line of goods has for some time been characterized by much unevenness of price, especially on the common goods and sizes most in demand, the manufacture of which has been taken up by new concerns. While there is still some irregularity in the prices of the different manufacturers this is a time of the year when there is an active and urgent demand for this line of goods and manufacturers who have complete stocks from which orders can be promptly filled are in a position to obtain somewhat better prices than a short time ago. The new lists on Black Japanned and White Japanned Registers are given below and the discounts applying to these and other finishes and related goods are as follows, terms 60 days net, or 2 per cent. discount for cash in 10 days:

Black Japanned Registers, Ventilators, Faces and Borders	70 %
White Japanned Registers, Ventilators and Faces (separate list)	70 %
Bronzed Finishes in Imitation of Gold, Silver, Copper and Bronze	70 %
Nickel Plated	70 %
Electroplated in Brass, Bronze, Copper, Oxidized Silver	70 %
Wall Frames	70 %
Heavy Round Gratings	70 %
Ventilating Plates	70 %
Cold Air Inlets	70 %
White Porcelain Enamel Registers, Ventilators, Faces and Borders	60 %
Solid Brass and Bronze Metal Registers, Ventilators, Faces and Borders	50 %

Registers, White Japanned.

List Sept. 2, 1901. Price each.

Size of opening.	Register.	Register face.	Wall frames. 2 in. deep.	Wall frames. 4 in. deep.
4½x 6½	1.70	.85	...	...
4 x 8	1.80	.90	...	...
4 x10	1.90	1.05	...	...
4 x12	2.15	1.30	...	...
4 x13	2.95	1.45	...	...
4 x15	3.50	1.70	...	...
4 x18	4.90	2.10	...	...
4 x21	7.00	3.25	...	...
4 x24	9.50	4.25	...	...
5 x 8	1.85	1.20	.90	1.60
5 x 9	1.90	1.25	1.00	1.70
5 x10	1.95	1.30	1.10	1.80
5 x11	2.15	1.45	1.20	1.90
5 x12	2.25	1.50	1.25	2.00
5 x13	3.10	1.90	1.30	2.20
5 x14	3.40	2.05	1.40	2.30
5 x15	4.30	2.35	1.45	2.40
5 x16	4.65	2.55	1.50	2.50
5 x17	5.00	2.80	1.60	2.60
5 x18	6.20	3.15	1.70	2.80
6 x 6	1.80	1.15	.90	1.40
6 x 8	1.85	1.20	1.00	1.70
6 x 9	1.90	1.25	1.10	1.80
6 x10	1.95	1.30	1.20	1.90
6 x12	2.25	1.50	1.30	2.20
6 x14	3.45	2.10	1.40	2.40
6 x16	4.80	2.80	1.60	2.70
6 x18	6.75	3.30	1.70	2.90
6 x20	8.65	4.40	1.90	3.10
6 x22	10.60	5.00	2.00	3.40
6 x24	12.30	6.00	2.20	3.60
6 x28	15.00	7.10	...	...
6 x30	16.20	7.50	...	...
6 x32	17.50	8.50	...	...
7 x 7	1.90	1.25	1.00	1.70
7 x10	2.00	1.30	1.20	2.10
7 x12	2.30	1.55	1.30	2.30
7 x14	3.55	2.30	1.50	2.50
7 x15	4.50	2.95	...	...
8 x 8	1.95	1.30	1.10	1.90
8 x10	2.00	1.35	1.30	2.20
8 x12	2.30	1.55	1.40	2.40
8 x13	3.30	2.15	1.50	2.50
8 x14	3.60	2.25	1.55	2.60
8 x15	4.55	3.20	1.60	2.80
8 x16	5.00	3.60	1.70	2.90
8 x18	7.90	4.80	1.80	3.10
8 x21	10.80	5.80	2.00	3.50
8 x24	13.50	6.75	2.30	3.80
8 x27	16.30	7.90	...	...
8 x30	18.35	9.00	...	...
9 x 9	2.40	1.70	1.30	2.20
9 x12	2.55	1.80	1.50	2.60
9 x13	3.55	2.20	1.60	2.70
9 x14	3.70	2.30	1.70	2.80
9 x15	4.75	2.45	1.75	2.90
9 x16	5.65	3.70	1.80	3.10
9 x17	7.15	4.45	1.90	3.20
9 x18	8.10	4.95	2.00	3.30
9 x19	9.35	5.50	2.05	3.40
9 x20	10.75	6.15	2.10	3.50
9 x22	13.70	6.80	...	...
9 x24	14.40	7.60	...	...
9 x25	17.10	8.85	...	...
9 x26	18.20	9.30	...	...
9 x28	20.50	9.75	...	...
9 x30	21.00	10.50	...	...
10 x10	2.85	1.95	1.50	2.50
10 x12	2.90	2.00	1.70	2.80
10 x14	3.80	2.40	1.80	3.00
10 x16	5.85	3.70	2.10	3.30
10 x18	8.10	4.95	2.20	3.50
10 x20	10.75	6.15	2.30	3.80
10 x24	14.50	7.60	...	4.30
11 x17	7.60	4.75	2.30	3.60
11 x18	8.15	5.00	...	...
11 x20	10.80	5.20	...	...
12 x12	4.80	3.30	2.00	3.10
12 x14	5.25	3.50	2.20	3.40
12x15	5.00	3.60	2.30	3.50
12x16	6.70	4.10	2.40	3.60
12x17	7.60	4.75	2.50	3.80
12x18	8.15	5.00	2.60	3.90
12x19	8.60	5.40	2.65	4.00
12x20	10.80	6.20	2.70	4.20
12x24	14.70	7.60	3.00	4.70
12x30	24.00	11.20	3.50	5.50
12x32	30.00	14.50	...	...
12x36	32.00	16.00	4.00	6.30
14x14	9.50	5.40	2.60	3.80
14x15	9.90	5.55	...	...
14x16	10.20	5.70	2.80	4.10
14x18	10.80	6.00	3.00	4.30
14x20	11.40	6.40	3.10	4.60
14x22	12.60	7.10	3.30	4.80
14x48	55.00	29.00	...	...
15x25	21.00	10.50	...	5.60
15x30	31.80	17.00	...	...
15x34	35.50	19.75	...	...
16x16	13.20	7.30	...	4.40
16x18	14.25	7.80	...	4.70
16x20	14.70	8.15	...	5.00
16x22	17.60	9.20	...	5.30
16x24	18.00	9.50	...	5.50
16x28	28.20	14.65	...	6.00
16x30	31.80	17.30	...	...
16x32	33.60	18.60	...	6.70
18x18	22.20	10.90	...	5.20
18x21	24.00	11.75	...	5.60
18x24	25.80	12.30	...	6.00
18x27	33.00	16.25	...	6.40
18x30	37.50	19.20	...	6.80
18x36	45.60	23.10	...	7.80
20x20	22.80	11.15	...	5.90
20x22	25.90	12.25	...	6.30
20x24	26.40	12.60	...	6.60
20x26	28.20	13.70	...	6.90
20x28	36.00	17.50	...	7.10
20x30	40.20	19.70	...	7.50
20x32	45.00	23.00	...	7.70
20x36	51.60	28.60	...	8.50
21x21	29.40	14.40	...	...
21x25	33.60	15.35	...	...
21x29	34.80	15.80	...	7.70
21x33	49.20	25.20	...	...
21x37	58.80	35.55	...	8.90
21x39	64.80	35.95	...	...
22x22	34.20	15.45	...	...
22x24	35.20	15.90	...	...
22x26	37.00	17.75	...	...
22x28	40.80	19.50	...	...
22x30	43.20	21.10	...	...
22x32	50.40	25.20	...	...
22x36	57.00	27.30	...	...
22x38	62.40	32.00	...	...
22x42	76.80	40.80	...	...
24x24	36.00	16.00	...	7.20
24x27	40.20	19.30	...	7.80
24x30	45.60	21.70	...	8.10
24x32	50.00	26.10	...	8.60
24x36	60.00	29.00	...	9.10
24x45	81.00	42.00	...	10.50
27x27	44.70	21.45	...	8.10
27x38	67.20	33.20	...	9.90
28x28	52.80	26.60	...	...
28x30	57.20	27.60	...	...
28x32	62.40	32.30	...	...
28x36	76.80	40.80	...	...
30x30	58.80	27.80	...	9.00
30x36	81.00	42.00	...	10.00
30x42	93.00	46.50	...	...
30x48	114.00	58.00	...	...
36x36	96.00	48.50	...	...
36x40	126.00	65.00	...	...
36x42	134.50	68.50	...	...
36x48	156.50	80.50	...	...
38x38	120.00	63.00	...	...
38x40	132.00	67.00	...	...
38x42	144.00	74.00	...	...

Registers, Black Japanned.

List Sept. 2, 1901. Price each.

Size of opening.	Register.	Register face.	Floor border.
4½x 6½	1.40	0.50	0.90
4 x 8	1.50	0.60	0.95
4 x10	1.55	0.75	1.00
4 x12	1.80	0.95	1.10
4 x13	2.50	1.00	1.50
4 x15	3.00	1.20	1.75
4 x18	4.10	1.30	2.00
4 x21	6.00	2.25	3.15
4 x24	8.00	2.75	3.75
5 x 8	1.55	0.80	1.00
5 x 9	1.55	0.90	1.05
5 x10	1.60	0.95	1.05
5 x11	1.75	1.10	1.15
5 x12	1.80	1.15	1.15
5 x13	2.60	1.35	1.45
5 x14	2.80	1.50	1.70
5 x15	3.60	1.65	2.20
5 x16	3.90	1.80	2.60
5 x17	4.20	2.00	3.00
5 x18	5.25	2.10	3.25
6 x 6	1.50	0.80	0.95
6 x 8	1.55	0.90	1.00
6 x 9	1.60	0.95	1.05
6 x10	1.60	0.95	1.05
6 x12	1.85	1.15	1.15
6 x14	2.85	1.65	1.80
6 x16	4.00	2.00	2.70
6 x18	5.75	2.25	3.25
6 x20	7.20	2.50	4.00
6 x22	8.90	3.00	4.25
6 x24	10.25	4.00	4.50
6 x28	12.50	4.60	5.40
6 x30	13.50	4.90	6.00
6 x32	14.50	5.50	6.50
7 x 7	1.55	0.95	1.00
7 x10	1.65	1.00	1.05
7 x12	1.90	1.15	1.15
7 x14	2.95	1.65	1.90
7 x15	3.75	2.20	2.50
8 x 8	1.60	0.95	1.00
8 x10	1.65	1.00	1.05
8 x12	1.90	1.15	1.15
8 x13	2.75	1.60	1.85
8 x14	3.00	1.65	1.90
8 x15	3.80	2.45	2.60
8 x16	4.50	2.70	2.70
8 x18	6.60	3.50	3.30
8 x21	9.00	4.00	4.00
8 x24	11.25	4.50	4.70
8 x27	13.60	5.20	5.40
8 x30	15.30	6.00	6.50
9 x 9	2.00	1.30	1.25
9 x12	2.10	1.35	1.30
9 x13	2.95	1.65	1.90
9 x14	3.10	1.70	1.95
9 x15	3.95	2.65	2.65
9 x16	4.70	2.75	2.75
9 x17	5.95	3.25	3.25
9 x18	6.75	3.60	3.30
9 x19	7.80	3.95	3.65
9 x20	8.75	4.35	3.75
9 x22	11.40	4.50	4.50
9 x24	12.00	5.10	5.10
9 x25	14.25	6.00	6.00
9 x26	15.25	6.25	6.25
9 x28	16.35	6.50	6.50
9 x30	17.50	7.00	7.00
10 x10	2.35	1.45	1.30
10 x12	2.40	1.50	1.35
10 x14	3.15	1.75	2.00
10 x16	4.85	2.75	2.80
10 x18	6.75	3.70	3.30
10 x20	8.95	4.35	3.85
10 x24	12.15	5.15	5.15
11 x17	6.35	3.50	3.25
11 x18	6.80	3.70	3.35
11 x20	9.00	4.40	4.00
12 x12	4.00	2.50	2.60
12 x14	4.35	2.60	2.65
12 x15	4.50	2.70	2.70
12 x16	5.60	3.00	3.00
12 x17	6.35	3.50	3.25
12 x18	6.80	3.70	3.35
12 x19	7.15	4.00	3.50
12 x20	9.00	4.40	4.00
12 x24	12.25	5.20	5.20
12 x30	20.00	7.20	7.00
12 x32	25.60	9.50	8.20
12 x36	26.75	11.00	9.00
14 x14	7.90	3.80	3.60
14 x15	8.25	3.95	3.95
14 x16	8.50	4.00	4.00
14 x18	9.00	4.25	4.25
14 x20	9.50	4.50	4.45
14 x22	10.50	5.00	4.85
14 x48	46.00	20.00	18.00
15 x25	17.50	7.20	6.25
15 x30	26.50	11.75	11.00
15 x54	29.50	13.75	12.50
16 x16	11.00	5.10	4.85
16 x18	11.90	5.50	5.15
16 x20	12.25	5.70	5.40
16 x22	14.75	6.25	5.95
16 x24	15.00	6.50	6.10
16 x28	23.50	9.95	9.90
16 x30	26.50	12.00	11.50
16 x32	28.00	13.00	12.50
18 x18	18.50	7.20	6.60
18 x21	20.00	7.75	6.80
18 x24	21.50	8.00	7.00
18 x27	27.50	10.75	8.85
18 x30	31.25	12.95	9.60
18 x36	38.00	15.50	12.00
20 x20	19.00	7.35	6.85
20 x22	21.60	7.95	7.40
20 x24	22.00	8.20	7.50
20 x26	23.50	9.00	7.90
20 x28	30.00	11.50	9.75
20 x30	33.50	13.00	11.90
20 x32	37.50	15.50	12.90
20 x36	43.00	20.00	13.95
21 x21	24.50	9.50	8.40
21 x25	28.00	9.75	8.60
21 x29	29.00	10.00	8.80
21 x33	41.00	19.00	14.50
21 x37	49.00	21.75	15.50
21 x39	54.00	25.00	16.50
22 x22	28.50	9.75	8.00
22 x24	29.50	9.90	8.80
22 x26	31.00	11.75	9.80
22 x28	34.00	12.75	10.60
22 x30	36.00	13.90	10.90
22 x32	42.00	16.80	13.00
22 x36	47.50	17.80	14.00
22 x38	52.00	21.90	15.00
22 x42	64.00	28.00	18.50
24 x24	30.00	10.00	8.85
24 x27	33.50	12.60	10.20
24 x30	38.00	14.10	11.60
24 x32	42.50	17.00	13.10
24 x36	50.00	19.00	15.50
24 x45	67.50	28.50	20.00
27 x27	37.25	14.00	11.50
27 x38	56.00	22.00	15.90
28 x28	44.00	17.80	15.00
28 x30	48.50	17.90	15.70
28 x32	52.00	21.90	15.90
28 x36	64.00	23.00	18.50
30 x30	49.00	18.00	16.10
30 x36	67.50	28.50	19.00
30 x42	77.50	31.00	22.50
30 x48	95.00	39.00	32.00
36 x36	80.00	32.50	23.50
36 x40	105.00	44.00	31.00
36 x42	112.00	46.00	34.00
36 x48	132.00	54.00	40.00
38 x38	100.00	43.00	32.00
38 x40	112.00	45.00	34.00
38 x42	120.00	50.00	36.00

Extra heavy Black Japanned Faces are furnished at 50 per cent. advance upon the ordinary Faces. Black and White Japanned Ventilators for cords are 50 cents list extra on all sizes up to 14 x 14, and $1 list extra on all sizes above.

Asbestos.—This commodity is in a somewhat anomalous condition, in that while the raw materials are higher than last year, contracts for which are in the main made for a year's supply, the manufactured products are somewhat lower. This is accounted for principally by the intense competition among manufacturer and distributer. The increased demand in the trade for the various forms of manufactured asbestos resulted in higher prices earlier in the season because the producers were not prepared to make adequate and prompt deliveries, but prices now in round lots to close buyers are about as follows: Building Felts, 2½ cents per pound; Mill Board, sheet, 40 x 40 inches, 3½ cents per pound; Mill Board, roll, thicker than 1-16 inch, 3½ cents per pound; Mill Board, roll, 1-16 inch and less, 2½ cents; Rope and Wick Packing as low as 14 cents, although a fair range would be 15 to 18 cents, one of the largest companies selling more at the latter than former price. Some business has been accepted as low as 3¼ cents for Mill Board in sheets thicker than 1-16 inch.

Oilers.—There has been an advance by several of the manufacturers of Zinc, Brass and Copper Oilers, and prices on these goods are about 10 per cent. higher.

Chain.—The manufacture of Chains is seriously interfered with by the existing strike, and there is a good deal of difficulty in obtaining goods. Under these circumstances some of the manufacturers are withdrawing quotations as not in a position to execute orders with promptness. Manufacturers or jobbers who have a stock of Chain on hand are able to realize higher prices.

Wire Nails.—Business in Wire Nails keeps up in large proportions, and, in the main, at regular prices. Some trouble is experienced in obtaining prompt shipments from the mills, who are unable to accumulate stock. Small lots from store at New York are quoted at $2.60 per keg.

Cut Nails.—The scarcity in the standard sizes of Cut Nails is becoming so pronounced that shipments are delayed in consequence. Some mills report that they are two weeks or more behind in their orders, owing to the difficulty in obtaining material from which to cut Nails. The demand is about of usual proportions. The ad-

vance in price of 5 cents per keg is not exacted in all cases of purchases from store in New York. Small lots from store are quoted at $2.18 to $2.30 per keg.

Wire.—The demand for Plain Wire continues heavy and has shown very little, if any, falling off. The mills are shipping their Wire as fast as it is turned out. The tone of the market is strong, small lots of Plain Wire being quoted at 2.60 cents per pound, and Galvanized at 3 cents.

Glass.—A meeting of the National Window Glass Jobbers' Association was held at Detroit, Mich., last week with representatives of the Window Glass combines in attendance. Reports have been in circulation that an advance in price was made at the meeting. Such is not the case, and quotations remain unchanged. It is stated that the lack of demand did not justify an advance in price.

White Lead.—No change has been made in the price of White Lead in Oil during the successive declines which have recently taken place in the prices of Linseed Oil. Some brands of White Lead are irregular in price, but standard makes are held well up to quotations, which for retail lots are 7 to 7¼ cents per pound.

Linseed Oil.—The last decline in the price of Linseed Oil on September 5 has stimulated the demand and caused a stronger feeling in the market as supplies are being absorbed. The retail price of Raw Oil is now quoted at 51 to 52 cents per gallon, Boiled Oil being 2 cents advance on Raw.

Spirits Turpentine.—Reports from the South are to the effect that the crop movement is becoming less and that stocks are light. Local prices are no higher than they were last week, but are quite stiff at 37½ to 38 cents per gallon for moderate sized lots. The demand at this point is fair.

TRADE NOTES.

WATERBURY BRASS COMPANY, Waterbury, Conn., advise us that business in their new store at Providence, R. I., has been constantly increasing since they took possession some months since, and they are now carrying a larger stock in all lines than ever before. The company have had a store in Providence for many years, but business increased to such an extent that they were compelled to seek more commodious quarters, which were secured at 131 Dorrance street and 152 Eddy street, where they have what is perhaps the finest store of its kind in this section of the country. Much of the prosperity of the company in the territory covered by the Providence store, which includes Rhode Island and Southeastern Massachusetts, is attributed to the efficient work of P. F. Parsons, who has managed this branch for nearly 20 years.

L. & R. WISTER & Co. of Philadelphia, for the purpose of offering better facilities to their Western trade, have opened an office at 331 Fourth avenue, Pittsburgh, under the management of Stewart B. Marshall, who for several years held a responsible position with the Dunbar Iron Company.

THE PITTSBURGH REDUCTION COMPANY of Pittsburgh, with works at New Kensington, Pa., and Niagara Falls, N. Y., and manufacturers of pure Aluminum, have let contracts that will about double the capcity of the Niagara Falls works. The contract for the building has been given to the McClintic-Marshall Construction Company of Pittsburgh, and the material is now being turned out in the works of this concern at Pottstown, Pa.

AT PITTSBURGH H. C. Reymer, a creditor of the Star Enameling & Stamping Company of Allegheny, Pa., has petitioned for a receiver for the company. The liabilities of the concern are placed at $40,000 and the assets at $80,000. The concern have a capitalization of $65,000.

THE AMERICAN BRASS COMPANY have secured control of the Holmes, Booth & Haydens Company, Boston, Mass. The present concerns comprising the combination known as the American Brass Company are: The Coe Brass Company of Torrington, Conn.; the Ansonia Brass & Copper Company of Ansonia, Conn.; Benedict & Burnham Mfg. Company, and the Waterbury Brass Company of Waterbury, Conn., and the Chicago Brass Company of Kenosha, Wis.

THE plant of the Wisconsin Graphite Company, at Allegheny, Pa., which was recently destroyed by fire, will be rebuilt immediately.

In July the imports of pig iron into the United Kingdom from the United States amounted to 319 tons, as compared with a maximum of 12,847 tons in January, 1901. The imports of "unwrought steel" were 65 tons in July, compared with the maximum of 16,647 tons in January, 1901.

CONTENTS.

	Page.
Editorials—	
The Shop and Business Management	47
Skill in Labor	47
The Strike	47
A Question of Discounts	48
Prices and Catastrophes	48
The New York Stove Trade	49
Stove Prices Hardening	49
Welcome Furnaces	49
The Anthra Cinderella Oak	49
Champion Steel Ranges	50
The Gruff Furnace Company	50
Sunshine Heating Stoves	50
Monarch Heaters	50
Striking It Rich	51
Universal Stoves and Ranges	51
Garland Soft Coal Specialties	51
Loth's Cook Stoves, Ranges and Heaters	51
The M & D Ranges	52
Buck's Stoves and Ranges	52
Odd Plates	52
New York's Latest Model Tenement	53
Large Shipments of Gas Stoves, Washing Machines, etc	53
Office Rules of a New York House. Illustrated	54
The King Coat and Hat Hook. Illustrated	54
The Red Man. Illustrated	54
Among the Steam Fitters	55
Kieley & Mueller's Catalogue	55
A New Floor Plate. Illustrated	55
Unfair Conditions of Specifications	56
A Crude Oil or Tar Burner. Illustrated	57
New York City Notes	57
Heating and Plumbing Notes	57
New Firms and Changes	58
American Manufactures in South Africa	58
The Rochester Mechanics' Institute	58
The Youngstown Iron & Steel Roofing Company	59
Washington Charcoal Iron Tin Mills	59
Ratios of Tin Plate Sizes	59
The Youngstown Iron, Sheet & Tube Company	59
Flashings	60
A Struggle with the English Language	60
The Steel Strike	61
The Letter Box—	
Pitch Pipe up to Tank. Illustrated	62
Putting on Standing Seam Roof	62
Who Makes the Nash Ventilator?	62
Will Boiler in Bathroom Circulate? Illustrated	62
Red Pepper for Red Ants	62
Should a New Tin Roof Be Laid Over an Old One?	62
Address Wanted	62
Trade Report—	
Market Summary	63
Metal Market	64
The Pig Iron Market	64
Chicago Report	64
The Hardware Trade	65
Notes on Prices	66
Trade Notes	67
Metal and Miscellaneous Prices	68
Labor Exchange—	
Help and Situations Wanted	72

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED SEPTEMBER 13, 1901

The following New York quotations are for small lots:

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots.....₩ lb, 37¢
100-lb lots.....₩ lb, 35¢
Aluminum Sheet, B. & S. gauge.
In lots of 50 lbs or more.

	6-in.	14-in.	24-in.
Wider than.....	14-in	24-in.	30-in.
And including.....	₩ lb	₩ lb.	₩ lb.
Nos. 13 to 19.....	$0.42	$0.44	$0.47
" 20.....	.44	.46	.49
" 21 to 23.....	.46	.48	.51
" 24.....	.46	.50	.53
" 25.....	.47	.51	.54
" 26.....	.47	.54	.59
" 27.....	.48	.57	.62
" 28.....	.48	.57	.64
" 29.....	.49	.60	.69
" 30.....	.50	.64	.77

Note.—Lots of less than 50 lbs 5¢ ₩ lb extra

Antimony—

Cookson.....₩ lb. 10½@11¢
Hallett's.....₩ lb, 8½@9¼¢
U. S.....₩ lb, 8½@9 ¢

Brass—Planished.....net

Roll and Sheet.....15@20% off

Brass and Copper Tubes

Brazed Brass Tubing—

Brown & Sharpe's Gauge the Standard.

List Feb. 26, 1896.

Plain Round Tube.	Per lb.	
¾-in. up to 2-in.	$0.35	30@35% off
⅝-in. up to ¾-in.	.36	
½-in. up to ⅝-in.	.38	
⅜-in. up to ½ in.	.41	
5-16-in. up to ⅜-in.	.48	
¼-in. up to 5-16-in.	.65	
3-16-in. up to ¼-in.	1.00	
⅛-in. up to 3-16-in.	1.50	
Smaller than ⅛-in.	Special	
2-in. and larger	Special	
½-in. to 3-in. inclusive.	.38	

Copper & Bronze Tubing—

3¢ ₩ lb more than Brass.

Conductors—

Corrugated. *Round or Square.*—

Galvanized ½ or more. N'st'd.....70&5%
" Not Nested.....70&2½%
" Plain Round, ½ or more, Nested.....70&5%
Galvanized, Plain Round, Not Nested. 70&2½%

Spiral Riveted.

Galvanized.....40%
See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—See *Strainers, Conductor.*

Copper—

Lake Ingot.....17¼@17⅝¢
Casting.....16¼@17 ¢
Sheet and Bolt.....21¢ ₩ lb basis
Cold Rolled Sheets.....22¢ ₩ lb basis
Cold Rolled and Polished Sheets..... 23¢ basis
Planished Sheets.....24¢ basis
Bottoms, Pits and Flats.....₩ lb 25¢ basis

Eaves Troughs—

List Feb. 1, 1895.

Lap or Slip Joint, Galvanized, in crates 75&10%

Eave Trough Mitres—

Lap or Slip Joint.....list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin.....30%
Galvanized.....30%
Perfect" Elbows.....40%

Stove Pipe—

Four-Piec

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz
No. 2.	.65	.70	.75	.80	.85 "
No 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Corrugated

Round or Square.

Galvanized.....60%

Gasoline—See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16.....	₩ lb 3.80...	3.85¢
Nos. 18 to 21.....	₩ lb, 3.90....	3.95¢
Nos. 22 to 24.....	₩ lb, 4.00....	4.05¢
Nos. 25 and 26...	₩ lb, 4.10....	4.15¢
No. 27	₩ lb, 4.20....	4.25¢
No. 28	₩ lb, 4.30....	4.35¢

Russia, Planished, &c.

Genuine Russia, according to assortment.....₩ lb 11@11½¢
Do. Stained.....6¢@10¢
Patent Planished. ₩ lb A, 12¢; B, 11¢ net

Galvanized.

Nos. 10 to 16.....₩ lb, 12¢
Nos. 17 to 21.....₩ lb, 13¢
Nos. 22 to 24.....₩ lb 14¢
Nos. 25 to 26.....₩ lb, 15¢
No. 27.....₩ lb, 16¢
No. 28.....₩ lb, 17¢
No. 29.....₩ lb, 19¢
No. 30.....₩ lb, 21¢
60% off.
36 in. 1¢ ₩ lb higher

Kerosene—See *Petroleum Products*

Lead—

American Pig.....4.60@4.62½¢
Bar.....5½@5¼¢
Pipe.....6½¢.....20% off
Tin Lined Pipe.....12½¢.....20% off
Block Tin Pipe.....40¢.....20% off
Sheet Lead, full rolls... 7¼¢ .....20% off
Sheet Lead, cut.....7¾¢.....20% off
Old Lead in exchange, 4½¢ ₩ lb.

Mitres, Eave Trough—See *Eave Trough Mitres.*

Nickel—

Per lb.....60@65¢

Paints, Oils, &c.—

Lead, White, Atlantic and Jewett's, 7¼¢
Lead. Amu. White, in oil..... 7@7¼¢
Lead, Red. bbls. and ⅛ bbls..... 7@7¼¢
Lead, Red, kegs..... 7@7¼¢
Linseed Oil:
Raw, ₩ gal.....51@52¢
Boiled.....54@55¢
Spirits Turpentine:
In bbls.....37½@38 ¢
Putty:
In barrels and ⅛ bbls.....2½
In tin cans.....3½
In bladders.....2¾¢

Palm Oil. 1500 lb casks.

Fancy Lagos.....₩ lb 6 ¢
Clarified.....₩ lb 5¾¢
Accra.....₩ lb 5½¢
Half Jaok.....₩ lb 5¼¢

Petroleum Products—

In Barrels (Barrel Included)
Stove Gasoline.....₩ gal. 12½@13¢
Kerosene.....₩ gal. 13@13½¢

Pipe, Drain.....40%

Pipe, Spiral—See *Conductors*

Registers—

List Sept. 2, 1901.
Black Japanned.....70%
White Japanned.....70%
Nickel Plated.....70%
Bronze Finishes in imitation of Gold, Silver, Copper or Bronze.....70%
Electroplated in Brass, Bronze or Copper.....70%
White Porcelain.....60%
Solid Brass and Bronze Metal.....50%

Roofing Material—

Heavy Single Ply Tar Felt,..... ₩ ton $30 00
2 Ply Roofing Felt.....₩ roll, 108 sq. ft. 65¢
3 Ply Roofing Felt....₩ roll, 108 sq. ft. 85¢
Roofing Pitch ₩ bbl.....$2 38

Rosin

(Barrels of 280 lb. Barrels weigh actually about 400 lb).
Common and Good—Strained.
Rosin, C. & D.....₩ bbl. $1.40 @$1.42
Rosin, E. & F.....₩ bbl. 1.55 @ 1.65
Rosin, G. & H.....₩ bbl. 1.70 @ 1.75
Rosin, I. & K.....₩ bbl. 1.80 @ 2.15
Rosin, M. & N.....₩ bbl. 2.60 @ 3.15

Seamless Brass Tubes—

Net List, February 6, 1899.

Shoes and Elbows—See *Elbows and Shoes.*

Slate Roofing—

According to size, f. o. b. cars, Quarry Station.
Pennsylvania:
Best Bangor, ₩ sqr. .....$3.25@$4.50
No. 1 Bangor ribbon, ₩ sq 3.00@ 3.50
Pen Argyle, ₩ sqr..... 3.00@ 3.75
Peach Bottom, ₩ sqr..... 4.85@ 5.60
No. 1 Boys, ₩ sqr..... 3.35@ 3.55
No 1 Chapman Keystone ₩ sqr..... 3.25@ 4.25
Vermont:
Sea Green, ₩ sqr.....$2.00@$3.00
Purple, ₩ sqr..... 3.75@ 4.25
Unfading Green, ₩ sqr... 3.25@ 4.50
Red, ₩ sqr..... 6.50@11.00
Maine:
Brownville, Unfading Black:
No. 1 quality.....$5.25@7.50
No. 2 quality.....$4.25@6.00

Solder—

½&½ guaranteed.....18½@19¢
No. 1.....15 @17 ¢
Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Concentrated Soldering Flux.
f.o.b. New York.
In barrels, ₩ lb.....4¢
Smaller quantities, ₩ lb.....5¢
Eureka Soldering Flux—Triple Strength
In barrels, ₩ lb..... 3 ¢
Smaller quantities, ₩ lb.....3½¢
Eureka Soldering Flux—Extra Concentrated
In barrels, ₩ lb..... ....4½¢
Smaller quantities, ₩ lb.....5 ¢
Eureka Soldering Flux—Crystal.
In 100-lb cases, ₩ lb.....7¢
Gedney's Soldering Fluid.
In carboys or barrels, ₩ lb.....2¢
$1.50 for carboy or barrel; money refunded when returned.
Lennox Soldering Fluid.
In barrels, ₩ lb.....2¢
In carboys, ₩ lb.....3¢
Perfection Soldering Flux.
No charge for package.
Bbls. about 500 lb, ₩ lb.....3¢
½ bbls., about 300 lb, ₩ lb.....3½¢
Kegs, about 110 lb, ₩ lb..... .3½¢
Kegs about 55 lb, ₩ lb..... .....4¢
Yager's Soldering Salts.
1 lb bottles each 60%
5 lb bottles, ₩ lb 40%

Soldering Coppers—

Per lb.....22@24¢

Spelter—

Western Spelter.....4.45@4½¢

Spiral Pipe—See *Conductors.*

Stove Pipe Elbows—See *Elbows, Stove Pipe.*

Stove Trucks—See *Trucks, Stove*

Strainers, Conductor—

Galvanized.....50%

Tin Pigs and Bars—

Banca, pigs, ₩ lb.....27@27½¢
Straits, pigs, ₩ lb.....26¾@27¢
Straits, in bars, ₩ lb.....27½@27¾¢

Tin Plates, American

Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.
Calland Grade:
IC, 14 x 20.....$8.25
IX, 14 x 20.....9.75
IXX, 14 x 20.....11.00
IXXX, 14 x 20.....12.25
IXXXX, 14 x 20.....13.50
Melyn Grade:
IC, 14 x 20.....7.75
IX, 14 x 20.....9.25
IXX, 14 x 20.....10.50
IXXX, 14 x 20.....11.75
IXXXX 14 x 20.....13.00
Allaway Grade:
IC, 14 x 20.....7.25
IX, 14 x 20.....8.35
IXX, 14 x 20.....9.45
IXXX, 14 x 20.....10.55
IXXXX, 14 x 20.....11.65

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight } IC, 14 x 20.....$7.15@7.25
" " IX, 14 x 20.....$8.00@8.25

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:
100 lb.....15¢
95 lb.....20¢
90 lb.....25¢
85 lb.....30¢

Terne Plates—

N. B.—The following prices are for IC, 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 lb coating and $2.50 to $3 00 advance for 15 lb and upward.
About 40 lb coating.....$18.50@19.00
About 30 lb coating..... 17.75@18.25
About 20 lb coating..... 15.75@16.25
About 15 lb coating..... 13.75@14.25
About 8 lb coating..... .....@13.00

Boiler Plates, American—

IXX, 14 x 26..(112 sheets).....$16.00
IXX, 14 x 28..(112 sheets)..... 17.00
IXX, 14 x 31..(112 sheets)..... 18.50

Troughs Eave—See *Eave Trough*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00
Steel Lock Frame, per doz..... 18.00
Daisy Improved pattern, ₩ doz... 18.00

Tubing—

Tin .....50% | Galvanized.....50%
Fittings for do.....40%

Zinc—

600 lb casks ₩ lb.....6¾¢
Per lb.....7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Fittings—

List of Oct 7, 1899
Cast Iron Fittings, Black and Galvanized, Standard sizes..60&5@60&10&5%
Cast Iron Bushings and Plugs.....65@70%
Cast Iron Flanges.....65@70%
Malleable Iron Fittings.....50@55%
" " Bushings.....65&5@70%
" " Unions.....70@70&10%
Wrought " Nipples.....65@70%
" " Couplings.....65@70%
" " Long Screws.....65@70%

Cast Iron Soil Pipe—

List Feb. 25, 1901.
2 to 6 inch inclusive.
Standard.....60@60&5%
Extra Heavy.....65@70%
All Fittings.....70@75%

Merchant Wrought Iron Pipe—

List Feb. 15, 1900
Random Lengths.

	Black.	Galv
to 1 inch.....	40%	20%
1¼ inch.....	50%	30%
1½ to 10 inch.....	55%	40%

NOTE.—*Manufacturers' prices are much lower than above, but prompt shipments are not obtainable.*

Valves, Cocks, &c.—

Iron Body Valves.....70@70&5%
Air Cocks and Radiator Air Cocks.....70@70&5%
Soldering Unions.....70&5@75%
" Nipples.....70&5@75%
Brass Unions (Rough and Finished).....70@70&5%
Jenkins Bros.':
Iron Body Valves, except Gate Valves 60%
All Iron Valves, except Gate Valves.. 40&5%
Iron Body Gate Valves. ....50@50&5%
All Iron Gate Valves.....35@40%
Iron Cocks, all Iron.....65@70%
" " with Brass Plugs.....60@65%
Brass Globe, Angle and Cross Valves... 65@65&10%
" " and Angle Valves, hose outlet.....65@65&10%
Brass Garden Hose Valves...65&10@70%
" Horizontal, Vertical and Angle Check Valves.....60@65%
Brass Safety Valves.....55%
" " Low Pressure....55%
Brass Radiator Valves .....65@70%
" " Jenkins 60%
Brass Jenkins' Globe, Angle, Cross and Corner Valves.....60%
Brass Jenkins' Safety and Check Valves.....50%
Brass Jenkins' Gate Valves.....60%
Brass Steam Cocks.....65@65&10%
" Gas Meter and Union Meter Cocks.....65@65&10%
Brass Fittings, Rough.....65@70%
" " Finished.....65@70%
" Bushings.....65@70%

Plumbers' Brass Work—

List of December 7, 1896.
Ground Key Work:
Rough Bibs and Stops.....65@70%
Finished Bibs.....60@65%
Rough Stop and Stop and Waste Cocks.....70@70&5%
Rough Stop and Stop and Waste Cocks, Patented.....65@65&5%
Compression Bibs.....65@65&5%
" " Flanged.....65@70%
Compression Bath Cocks and Double Bath Cocks.....65@70%
Compression Basin Cocks.....65@65&5%
Fuller Bibs.....70@70&10%
Fuller Basin Cocks, Nos. 1 to 4.70&10@75%
Fuller Bath Cocks, No. 4½.....$2 00 net
Chain Stays.....60&5@70%
Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face..₩ set	$0.95	$1.05
Ground Face ₩ set	$1.00	$1.10

Basin Plugs.....40@65%
Sink or Bath and Wash Tray Plugs.....60@65%
Basin Clamps .....60@65%

Bath Tubs—

Cast Iron Enameled Bath Tubs.
List of March 26, 1900.
Regular Patterns. Guaranteed....30& 10@45;
All High Grade and Special Pattern (except as below).....25%
"Diana" and "Brighton."".....25%
Non-Guaranteed Brands, complete line.....45%
Steel Clad Copper Lined Bath Tubs, list of Feb. 1, 1899.....45@50%
Solid Porcelain Bath Tubs.....25%
Solid Copper, list of Feb. 1, 1899.....40%

Boilers—

Standard Boilers:
30 gal.....65&10@70%
35 and 40 gal.....65@65&10%
Other sizes up to 52 gal....60@60&10%
52 gal. and above.....60@60&5%
Extra Heavy Boilers:
18 to 52 gal ..... 50&10@60%
53 gal. and above ....50@55%

Sinks—

	Cast Iron—Black	Galv.
Sinks, Square, Half Round and Corner.	60%	60@65%
Sink Legs.	.....60%	60@65%
Sink Backs	.....60%	60@65%

Wrought Steel—

New Era, Galv'd and Enameled. ..70&5%
New Era, Painted.....50&10%
L. & G.....50%

Miscellaneous—

Earthenware, List of Aug. 15, 1901: Basins, Urinals and Honners..... 50%
Closet Bowls, Sundries, Washouts and Pedestals.....5%
Drawn Lead Traps, List of June 5, 1901.....50@50&5%

ALPHABETICAL LIST OF ADVERTISERS.

Adler, H. Co..... 14
American Hardware Mfg.Co. 85
American Radiator Co..... 25
American Sheet Steel Co....1&80
American Tin Plate Co. 80
Arcade Mfg. Co..... 87
Armstrong Mfg. Co..... 45
Asheville Mica Co..... 36
Asphalt Ready Roofing Co .. 81
Atlas Radiator Pedestal Co... 35
Auld & Conger..... 75
Ayling Bros..... 40
Barstow Stove Co..... 88
Beaton & Corbin Mfg. Co..... 35
Beckwith, P. D., Est. of..... 2
Berger Bros. Co.....41&76
Berger, L. D..... 84
Berger Mfg. Co 82
Bergstrom Bros. & Co..... 28
Bertsch & Co..... 86
Bliss, E. W. Co..... 86
Blodgett, G. S. Co..... 34
Boynton Furnace Co..... 6
Brand Stove Co..... 27
Bray, J. & Co..... 75
Bridgeport Crucible Co..... 39
Brien Heater Co..... 35
Brohard Co..... 41
Brooklyn Metal Ceiling Co.... 78
Bruce & Cook.....81&88
Brucker, M..... 40
Buckwalter Stove Co..... 8
Burton, W. J. & Co..... 77
Butler Steel Furnace Co..... 31
Callahan, Geo. & Co..... 76
Canton Steel Roofing Co..... 88
Carroll, J. B..... 43
Castle, Wilmot & Co..... 32
Champion Steel Range Co.... 31
Cheney, S. & Son 1
Cincinnati Stamping Co....35&84
Clark, Henry N. Co..... 40
Clark Novelty Co..... 74
Clark, Quien & Morse..... 79
Clason Arch. Metal Works... 75
Clayton & Lamhert Mfg. Co.. 45
Clough, R. M..... 87
Colebrook, W. H. Sons & Co. 37
Colwell Lead Co..... 44
Connors, Wm. Paint Mfg. Co. 78
Cooney & Geiger..... 76
Co-operative Foundry Co..16&17
Cope, Geo. W 40
Cortright Metal Roofing Co... 77
Crosby Steam Gage & Valve Co..... 1
Curtis & Curtis Co..... 44
Dangler Stove & Mfg. Co..... 34
Dean Boiler Co..... 36
Detroit Stove Works..... 18
Dighton Furnace Co....1, 13&26
Dixon, Jos. Crucible Co..... 43
Donaldson, O. G. & D. H..... 40
Double Truss Cornice Brake Co 84
Dowman Mfg. Co..... ... 76
Drake, W. H..... 30
Dronve, G. Co..... 84
Edwards, J. H..... 45
Eclipse Stove Co..... 18
Eller, J. H. & Co..... 83
Energy Elevator Co..... . .. 44
Enterprise Stove Co..... 14
Esterbrook's, R. Sons..... 43
Excelsior Stove Mfg. Co..... 12
Fenn, Geo. E..... 76
Floyd, Wells & Co..... 29
Follansbee Bros. Co..... 1
Forest City F'dry & Mfg. Co.. 30
Foster, F. W. Mfg Co..... 45
Friedley & Voshardt..... 82
Frink, I. P..... 88
Front Rank Steel Furnace Co 26
Fuller & Warren Co.....1&15
Fulmer, J. H..... 88
Galesburg Cornice Works.... 84
Galt, John & Sons..... 75
Galusha Stove Co..... 9
Garry Iron & Steel Co..... 81
Garvin Machine Co 84
Genuine Bangor Slate Co..... 75
Giblin & Co..... 20
Globe Ventilator Co..... 76
Gobeille Pattern Co..... 41
Gordon, W. J..... 87
Gorton & Lidgerwood Co..... 1
Greene, W. F., Est. of..... 33
Gummey, McFarland & Co... 79
Gurney & Co..... 18
Gurney Heater Mfg. Co. 27
Hamlin, G. R..... 75
Hanson & Van Winkle Co..... 43
Harrington & King Perforating Co..... 69
Hart & Crouse Co..... 28
Heath, C. C. & Co..... 27
Hessler, H. E. Co..... 39
Hoffman, Geo. W..... 40
Howard Thermostat Co..... 10
Howes, S. M. Co..... ..24, 40&41
Howson & Howson 74
Hungerford, U. T., Brass & Copper Co..... 87
Independent Register Co..... 36
International Correspondence Schools..... 73
International Heater Co..... 9
Janney, Steinmetz & Co..... 75
Jenkins Bros..... 1
Johnson, E. J. & Co..... 75
Joliet Stove Works..... 11
Keeley Stove Co..... 14
Keene, Geo. C. & Co 87
Kelsey Furnace Co..... 46
Kemp, C. M. Mfg. Co..... 45
Kewanee Boiler Co..... 29
Kieley & Mueller..... 1
Klauer Mfg. Co..... 77
Koven, L. O. & Bro..... 37
Lamb & Ritchie..... 45
Landers, Frary & Clark..... 43
Lawrence-Letts Elbow Co.... 38
Lennox Machine Co..... 36
Livermore, H. F..... 44
M & D Range Co,..... 6
McClure & Co..... 88
McLain, J. H. Co..... 34
McLeod & Henry Co..... 1
McSherry, Chas..... 85
Magee Furnace Co .....1&25
Magoon, A. J. & Son 37
Marcy Stove Repair Co..... 39
Marlin & Co..... 82
Marston, I. G. & Co..... 44
Menrer Bros. Co..... 79
Meyer, F. & Bro. Co 26
Michigan Stove Co.....4&5
Millar, Chas. & Son Co..... 88
Miner & Peck Mfg. Co 41
Montross Metal Shingle Co.... 81
Morgan & Co..... 44
Mueller, L. J. Price Co..... 23
Munsell, E. & Co..... 37
National Enameling & Stamping Co..... 46
National Pipe Bending Co.... 30
New Haven Novelty Machine Co 45
Newton, Wm. M..... 1
New York Iron Roofing & Corrugating Co..... 79
New York Trade School..... 73
Niagara Machine & Tool Wks. 83
Noyes & Nutter Mfg. Co..... 90
O'Halloron & Jacobs..... 75
Ohio Mica Co..... 36
Ohl, Geo. A. & Co..... 86
Osborn, J. M. & L. A 81
Ostrander, W. R. & Co..... 37
Palermo Mica Co.. 36
Peck, Stow & Wilcox Co..... 85
Perfection Furnace Pipe Co.. 33
Perkins, J. L. & Co..... 39
Phila. Machine Tool Co..... 85
Phila. Stove & Iron Fdry..... 12
Pierce, Butler & Pierce Mfg. Co..... 85
Pittsburgh Stove & Range Co.19
Pocock, Oliver..... 84
Portsmouth Stove & Range Co. 8
Presbrey Stove Lining Co..... 39
Quincy Fdry & Novelty Co... 18
Reeves Mfg. Co..... 78
Resor, Wm. & Co..... 13
Rhodes, L. E. Co..... 45
Richmond Stove Co..... 36
Ringen Stove Co..... 7
Robinson, J. M. & Co..... 87
Rochester Radiator Co..... 32
Rutland Fire Clay Co..... 98
Sackman, F. A..... 74
Safety Furnace Pipe Co..... 32
Salem Nail Co..... 76
Samuel, M. & L. Benjamin & Co..... 77
Sanborn, John..... 81
Saunders', D. Sons..... 44
Schaffer, John P..... 81
Schill Bros. Co..... 14
Schulte, John A. & Co..... 19
Schratwiesers Metal Lath Works..... . 81
Schwab, R. J. & Sons Co..... 23
Schwerdtle Stamp Co..... 75
Seavey Mfg. Co..... 85
Sheppard, Isaac A. & Co..... 1
Silver & Co..... 74
Smith, H. B. Co..... 21
Smith & Anthony Co..... 88
Smith & Thayer Co 82
Smith-Warren Co..... 78
Special Notices..... 73
Sperry, D. R. & Co..... 74
Stamford Foundry Co 85
Stanton Heater Co..... 28
Stiles & Parker Press Co..... 86
Stocking, E. B..... 78
Stolz, Frank D..... 80
Stover Mfg. Co 41
Stowell Mfg. Co..... 77
Stuber & Kuck..... 86
Taylor & Boggis Fdry. Co.... 41
Taylor Co., N. & G..... 88
Townley, H P. 73
Trimont Mfg. Co..... 43
Troy Nickel Works..... 89
Tubular Heating & Ventilating Co..... 24
Tucker & Dorsey Mfg. Co.... 37
Union Stove Repair Co..... 41
Utica Heater Co..... 22
Valentine, M. D. & Bro. Co... 39
Vance Boiler Works..... 30
Vanderman Plumbing & Heating Co..... 44
Vedder Pattern Works..... 37
Vogel, William & Bros 74
Vulcan Metal Refining Co.... 73
Vulcan Western Co..... 73
Walker & Pratt Mfg. Co..... 9
Washburne, E. G. & Co.....76&84
Watson, Jas. H. Est..... 77
Wayne, Anthony Mfg Co.... 84
Weir Stove Co..... 88
Weiss, H. & Co..... 84
Wheeler, W. A..... 85
Williams Stove Lining Co.... 38
Wireton Heating Co..... 36
Wister, L. & R. & Co 88
Wolff, L. Mfg. Co..... 44
Wood & Bishop Co..... 36
Wood, Alan Co..... 81
Young, Jos. H..... 43
Zero Valve & Brass Mfg. Co.. 45
Zucker & Levett & Loeb Co.. 43

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Janney, Steinmetz & Co., Phila., Pa.

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Janney, Steinmetz & Co., Phila., Pa.

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Janney, Steinmetz & Co., Phila., Pa.

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Koven, L. O. & Bro., 50 Cliff St., N. Y.
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Jenkins Bros., 71 John St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

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Huugerford, U. T. Brass & Copper Co., 121 Worth St., N.Y.

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Martin & Co., Pittsburgh, Pa.
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Watson, Jas. H. Est., Crawfordsville, Ind

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Safety Furnace Pipe Co., Detroit, Mich.
Schaffer, Jno. P., Pittsburgh Pa.

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Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Brien Heater Co., Hoosick Falls, N. Y.
Buckwalter Stove Co., Royersford, Pa
Butler Steel Furnace Co., Butler, O.
Co-operative Foundry Co., Rochester, N. Y.
Dean Boiler Co., Boston, Mass.
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Forest City Fdry. & Mfg. Co., Cleveland, Ohio.
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International Heater Co., Utica, N. Y.
Keeley Stove Co., Columbia, Pa.
Kelsey Furnace Co., Syracuse, N. Y.
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Magee Furnace Co., Boston, Mass.
Meyer, F. & Bro, Co., Peoria, Ill.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
Noyes & Nutter Mfg. Co., Bangor, Maine.
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Schaffer, John P., Pittsburgh, Pa
Schill Bros., Crestline, O.
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Stamford Foundry Co., Stamford, Ct.
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Gurney Heater Mfg. Co., Boston, Mass.
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Sheppard, Isaac A. & Co., Phila., Pa.
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Stocking, E. B., Washington, D. C.

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Vedder Pattern Wks., Troy, N. Y.

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Harrington & King Perforating Co., Chicago, Ill.

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Wister, L. & R. & Co., Philadelphia, Pa.

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Livermore, H. F., Boston, Mass.

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New Haven Novelty Machine Co., New Haven, Conn.

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Estabrook's Sons, R., Boston, Mass.

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Lamb & Ritchie, Cambridge, Mass.

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Lamb & Ritchie, Cambridge, Mass.
Landers, Frary & Clark, New Britain, Conn.
National Pipe Bending Co., New Haven, Conn.
New Haven Novelty Machine Co., New Haven, Conn.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
Vanderman Plumbing & Heating Co., Willimantic, Conn.
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Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

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Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
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Robinson, J. M. Mfg. Co., Cincinnati, Ohio.

Punching Machines.
Bertsch & Co., Cambridge City, Ind.
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Clough, R. M., Tolland, Conn.
Garvin Machine Co., 257 Spring Street, New York.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.

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Atlas Radiator Pedestal Co., New London, Conn.

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Burton, W. J. & Co., Detroit, Mich
Castle, Wilmot & Co., Rochester, N.Y.
Independent Register Co., Cleveland, Ohio.
Rochester Radiator Co., Rochester, N. Y.

Radiators, Steam and Hot Water.
American Radiator Co., Chicago, Ill.
Gurney Heater Mfg. Co., Boston, Mass.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.

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Wolff, L. Mfg. Co., Chicago, Ill.

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Independent Register Co., Cleveland, Ohio.
Seavey Mfg. Co., Boston, Mass.

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Callahan, Geo. & Co., 218 Front Street, N. Y.
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Dixon, Jos. Crucible Co., Jersey City, N. J.
Perkins, J. L. & Co., Chicago.

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Stowell Mfg. Co., Jersey City, N. J.

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Berger Mfg. Co., Canton, O.
Burton, W. J. & Co., Detroit, Mich.
Canton Steel Roofing Co., Canton, O.
Eller, J. H. & Co., Canton, O.
Garry Iron & Steel Co., Cleveland, O.
Gummey, McFarland & Co., Phila., Pa.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Roofing Nails.
Salem Nail Co., 279 Pearl St., N.Y.

Roofing Slate.
Auld & Conger, Cleveland, O.
Bray, J. & Co., E. Bangor, Pa.
Galt, John & Sons, 253 Broadway, N.Y.
Genuine Bangor Slate Co., Easton, Pa.
Johnson, E. J. & Co., 38 Park Row, N Y.
O'Halloran & Jacobs, Pittsburgh, Pa.

Sashes, Metal.
Smith-Warren Co., Boston, Mass.

Schools and Colleges.
International Correspondence Schools, Scranton, Pa.

Screens.
Harrington & King Perforating Co., Chicago, Ill.

Shears, Sheet Metal
McSherry, Chas., Pittsburgh, Pa.
Peck, Stow & Wilcox Co., 27 Murray St., N. Y.

Sheet Metal Machinery.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Clough, R. M., Tolland, Conn.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Garvin Machine Co., 257 Spring Street, New York.
Keene, Geo. C. & Co., Cincinnati, O.

SEE ALPHABETICAL INDEX, PAGE 69.

Miner & Peck Mfg. Co., New Haven, Conn.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Pocock, O., Cincinnati, O.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.

Sheets, Galvanized.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
McClure & Co., Pittsburgh, Pa.
Osborn, J. M. & L. A., Cleveland, O.
Taylor, N. & G. Co., Philadelphia, Pa.
Wood Alan Co., Philadelphia, Pa.

Sheets, Iron and Steel.
American Sheet Steel Co., New York.
Bruce & Cook, 186 to 190 Water St., N. Y.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
Osborn, J. M. & L. A., Cleveland, O.
Taylor, N. & G. Co., Philadelphia, Pa.
Wood Co., Alan Philadelphia, Pa.

Shingles and Tiles, Metallic.
Cincinnati Stamping Co., Cincinnati, O.
Cortright Metal Roofing Co., Philadelphia, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Montross Metal Shingle Co., Camden, N. J.

Shot.
Colwell Lead Co., 63 Centre St., N. Y.

Siding. *(See Roofing and Siding.)*

Skylights.
Canton Steel Roofing Co., Canton, O.
Drouve, G. Co., Bridgeport, Conn.

Slaters' Tools.
Galt, Jno. & Sons, 253 Broadway, N. Y.
Salem Nail Co., 279 Pearl St., N. Y.

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Clason Arch. Metal Works, Providence, R. I.
Fulmer, J. H., Nazareth, Pa.

Solder.
Bruce & Cook, 186 to 190 Water St., N. Y.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Sanborn, J., 217 Water St., N. Y.
Taylor, N. & G. Co., Philadelphia, Pa.

Speaking Tubes and Whistles.
Ostrander, W. R. & Co., 204 Fulton St., N. Y.

Specialties, Sheet Metal.
Vogel, Wm. & Bros., Brooklyn, N. Y.

Stamping, Sheet Metal.
American Hardware Mfg. Co., Ottawa Ill.

Steam and Gas Fitters' Supplies.
Curtis & Curtis Co., Bridgeport, Conn.

Steam and Water Engineering and Regulating Specialties.
Kieley & Mueller, 7-11 West 13th St., N. Y.

Steel Stamps and Stencil Dies.
Hackman, F. A., Cleveland, O.
Schwerdtle Stamp Co., Bridgeport, Ct.

Stop and Waste Cocks.
Landers, Frary & Clark, New Britain, Conn.

Stove Cement.
Dixon, Jos. Crucible Co., Jersey City, N. J.

Stove Linings.
Bridgeport Crucible Co., Bridgeport, Conn.
McLeod & Henry Co., Troy, N. Y.
Marcy Stove Repair Co., 74 Beekman St., N. Y.
Newton, W. M., Albany, N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Rutland Fire Clay Co., Rutland, Vt.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Tannton, Mass.

Stove and Metal Polish.
Ayling Bros., Chicago, Ill.
Hoffman, Geo. W., Indianapolis, Ind.
Rutland Fire Clay Co., Rutland, Vt.

Stove Patterns.
Cope, G. W., Detroit, Mich.
Gobeille Pattern Co., Cleveland, O.
Vedder Pattern Works, Troy, N. Y.

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Reeves Mfg. Co., Canal Dover, O.
Stuber & Kuck, Peoria, Ill

Stove Pipe Thimbles.
Cheney, S. & Son, Manlius, N. Y.

Stove Repairs.
Brucker, M. Cocago, Ill.
Clark, Henry N. Co., Boston, Mass.
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Marcy Stove Repair Co., 74 Beekman St., N. Y.
Troy Nickel Works, Troy, N. Y.
Union Stove Repair Co., Chicago, Ill.

Stove Trimmings, &c.
Greene, W. F., Est. of, Troy, N. Y.
Troy Nickel Works, Troy, N. Y.

Stove Trucks.
Arcade Mfg. Co., Freeport, Ill.
Hessler, H. E. Co., Syracuse, N. Y.
Howes, S. M. Co., Boston, Mass.
Tucker & Dorsey Mfg. Co., Indianapolis, Ind.

Stoves and Ranges.
Barstow Stove Co., Providence, R. I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Buckwalter Stove Co., Royersford, Pa.
Champion Steel Range Co., Cleveland, Ohio.
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Eclipse Stove Co., Mansfield, O.
Enterprise Stove Co., Vincennes, Ind.
Excelsior Stove Mfg. Co., Quincy, Ill.
Floyd Wells & Co., Royersford, Pa.
Fuller & Warren Co., Troy, N. Y.
Galusha Stove Co., Rochester, N. Y.
Gurney & Co., Boston, Mass.
Joliet Stove Works, Joliet, Ill.
Keeley Stove Co., Columbia, Pa.
M & D Range Co., Chicago, Ill.
Magee Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Phila. Stove & Iron Foundry, Phila., Pa.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Portsmouth Stove & Range Co., Portsmouth, O
Quincy Fdry. & Novelty Co., Quincy, Ill.
Resor, Wm. & Co., Cincinnati, O.
Richmond Stove Co., Norwich, Conn.
Ringen Stove Co., St. Louis, Mo.
Schill Bros. Co., Crestline, O.
Schulte, John A. & Co., Cincinnati, O.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Stamford Foundry Co., Stamford, Ct.
Walker & Pratt Mfg. Co., Boston, Mass
Weir Stove Co., Taunton, Mass

Stoves and Ranges, Gas.
Adler H. Co., Pittsburgh, Pa.
Dangler Stove & Mfg. Co., Cleveland, Ohio.
Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Ringen Stove Co., St. Louis, Mo.

Stoves and Ranges, Oil, Vapor and Gasoline.
Dangler Stove & Mfg. Co., Cleveland, Ohio.
Heath, C. O. & Co., Phila., Pa.
Hessler, H. E. Co., Syracuse, N. Y.
Keeley Stove Co., Columbia, Pa.
Ringen Stove Co., St. Louis, Mo.

Street Lamps, Gasolene.
Merkel, H., St. Louis, Mo.

Tank Heaters.
American Radiator Co., Chicago, Ill.

Tanks, Steel and Wood.
Edwards, J. H., 59 Park Place, N. Y.

Terne Plates.
American Tin Plate Co., New York.

Tinners' Tools, Machines and Supplies.
Berger, L. D., Philadelphia, Pa.
Berger Bros. Co., Phila., Pa.
Bertsch & Co., Cambridge City, Ind.
Bliss, E. W. Co., Brooklyn, N. Y.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Keene, Geo. O. & Co., Cincinnati, O.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn, N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y.

Tinners' Trimmings.
Vogel, Wm. & Bros. Brooklyn, N. Y

Tin Plate.
American Tin Plate Co., New York.
Berger, L. D., Philadelphia, Pa.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Samuel, M. & L. Benjamin & Co., Toronto, Can.
Taylor, N. & G. Co., Philadelphia, Pa.

Tin Scrap.
Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co., Streator, Ill.

Tools and Machines, Steam and Gas Fitters'.
Armstrong Mfg. Co., Bridgeport, Conn
Curtis & Curtis Co., Bridgeport, Conn.
Livermore, H. F., Boston, Mass.
Saunders', D. Sons, Yonkers, N. Y.

Torches, Plumbers.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Trade Schools.
New York Trade School, First Ave., 67th and 68th Sts., New York.

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Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Morgan & Co., Chicago.

Ventilators and Chimney Caps.
Berger Bros. Co., Phila., Pa.
Dowman Mfg. Co., Atlanta, Ga.
Fenn, Geo. E., Boston Mass.
Globe Ventilator Co., Troy, N. Y.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Washers, Valves, &c.
Marston, L. G. & Co., Boston, Mass

Washing Machines.
Wayne, Anthony Mfg. Co., Ft. Wayne, Ind.

Water Coolers.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Water Closets.
Colwell Lead Co., 63 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.
Donaldson, O. G. & D. H., Buffalo, N. Y.

Water Heaters.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Water Lifts.
Rhodes, L. E. Co., Hartford, Conn.

Wind Gates.
Miner & Peck Mfg. Co., New Haven Ct.

Window Frames, Metal.
Smith-Warren Co., Boston, Mass.

SEE ALPHABETICAL INDEX, PAGE 69.

THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

Published Weekly at the Following Subscription Price:

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DAVID WILLIAMS COMPANY, Publishers.

232, 234, 236 and 238 William Street, NEW YORK. 805 Fisher Building, CHICAGO.

New York (Main Office), - -	232-238 William Street, - - - - - -	JOHN S. KING, General Manager.
Philadelphia, - - - - - -	Forrest Building, 117-119 South Fourth Street, - -	THOMAS HOBSON, Manager.
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LONDON OFFICE: Hastings House, Norfolk Street, Strand.

AUSTRALIAN OFFICES: Melbourne, Hardware Chambers, 231 Elizabeth Street; Sydney, Paling's Buildings.

Remittances should be made by draft, payable to the order of DAVID WILLIAMS COMPANY, on any banking house in the United States or Europe, or by P. O. Money Order on New York. When these cannot be obtained, postage stamps of any country will be received.

Newsdealers or Booksellers in any part of the world may obtain *The Metal Worker* through The American News Company, New York, U. S. A.; The International News Company, New York, U. S. A., and London, England; or The San Francisco News Company, San Francisco, Cal., U. S. A.

Entered at the Post Office, New York, as Second-class Matter.

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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

Experienced STEAM HEATING SOLICITOR and SALESMAN, acquainted with the New York builders; state age, salary and references. Raisler Heating Company, 186 Wooster street, New York. Sept. 14

Two good, first-class TINNERS to make hand made assortment by piece work; must be good on wash boilers. W. F. Janeway, Columbus, Ohio. Sept. 14

At once, a first-class TINNER and PLUMBER; must be an experienced all around man; steady job to right man; state wages expected. Thornton & Freeborn, Randolph, N. Y. Sept. 14

A good all around man who understands and can do TINNING, PLUMBING and STEAM HEATING; must be strictly honest and sober and able to help in store at times; steady job and good wages to right man; none but experienced men need apply; answer, with reference, Louis Stanton, Frostburg, Md. Sept. 14

Wanted, three or four men who are able to do CORNICE WORK and METAL CEILING WORK; men who can handle both lines preferred. Apply at once, S. Keighley Metal Ceiling & Mfg. Company, 819 Locust street, Pittsburgh, Pa. Sept. 14

A good all around man for country work who is a practical TINNER and PLUMBER; must be absolutely sober, reliable, a hustler, and look after store at times; steady employment year around to right party; no lost time; married man preferred; give references and state wages wanted. G. W. Vandeveer & Son, Springfield Center, N. Y. Sept. 14

A TINSMITH who understands furnace work and jobbing in plumbing; none but a competent man need apply. G. W. Minor, Waterbury, Conn. Sept. 14

A TINNER who can do some steam heating and a little plumbing; state wages; job open at once. W. O. Houck, Bangor, Pa. Sept. 14

Several good CORNICE MAKERS on inside and outside work; only steady and reliable men need apply. Henry E. Wieber, Kingston, N. Y. Sept. 14

A first-class TINNER, one who is especially good on furnace work; eight hours, good wages and steady work to the right man. Robert Jahn, Scotch Plains, N. J. Sept. 14

Two TINSMITHS wanted at once; sober; state age and wages expected. James Fitzgibbon, Red Bank, N. J. Sept. 14

A first-class, sober and steady TINSMITH for a first-class shop situated about 40 miles from New York City; we will pay good wages and give steady employment to a man that can do our work; must understand range and furnace work and be capable of cutting patterns; we must have a neat and smart mechanic; state age, married or single, and wages wanted. "W. M.," care *The Metal Worker,* New York. Sept. 14

A first-class SALESMAN, acquainted with the building and contracting trade of New York and vicinity. "New York," care *The Metal Worker,* New York. Sept. 14

A good all around man at TIN WORK and PLUMBING. John Hovell & Son, 979 Avenue D, Bayonne, N. J. Sept. 14

First-class CORNICE and SKYLIGHT MEN; some for outside and for inside work; eight hours. The G. Drouvé Company, Bridgeport, Conn. Sept. 14

SALESMAN that thoroughly understands soliciting steam and water heating for small shop; will give half the profits to right party; no expenses or salary given. "Homer," care *The Metal Worker,* New York. Sept. 14

A PLUMBER of ability; one accustomed to estimating on new work; permanent position to the right man. Apply John Revett, 19 Wright street, Newark, N. J. Sept. 14

Two good CORNICE MAKERS and one TINSMITH; wages $2.50 per day to good all around men. Alfred Martin & Co., Rockford, Ill. Sept. 14

A first-class PLUMBER and GAS FITTER; none but first-class and sober men need apply. L. W. Joseph, Morgantown, W. Va. Sept. 14

An up to date man on PATTERN MAKING for cast soil pipe; a man who can take charge of the casting work. "Mac," care *The Metal Worker,* Hamilton Building, Pittsburgh, Pa. Sept. 7

First-class WOOD PATTERN MAKERS on stove and furnace work. "H. H. H.," care *The Metal Worker,* New York. Sept. 7

Liberal inducements to SALESMEN to sell mica to the hardware and stove trade. "Mica," care *The Metal Worker,* New York. Sept. 7

A first-class TINMAN and all around jobber. Tracy Bros., Ballston Spa, N. Y. Sept. 7

SLATE ROOFERS wanted at once; state wages required; steady work for sober men. A. C. Hathorne, Burlington, Vt. Sept. 7

At once, first-class FOUNDRYMAN to take charge of steam and hot water furnaces and ranges. "Hot Water," care *The Metal Worker,* New York. Sept. 7

Wanted at once, one good PLUMBER; one that has some knowledge of steam fitting preferred. Chas. Thomas, Kennett Square, Pa. Sept. 7

Wanted, a TINSMITH and JOBBER for country shop with some knowledge of steam heating and plumbing; must be sober and honest and willing to look after store at times; give references and wages wanted. Wm. C. Cook, Branchville, N. J. Sept. 7

A young man who has worked in a hardware store and tinshop and would like to finish his trade; steady position and board with employer to right man. Box 70, Worcester, N. Y. Sept. 7

Two or three CORNICE MAKERS for in and outside work; must be hustlers; good wages; apply at once, ready for work. Newburgh Cornice Works, Newburgh, N. Y. Aug. 31

Five experienced CORNICE and SKYLIGHT MAKERS and five TIN ROOFERS; write, stating wages. James Ackroyd, 10 and 12 James street, Albany, N. Y. Aug. 24

SITUATIONS WANTED.

By a first-class TINSMITH and ROOFER. Lewis Kronovetz, 404 East Tenth street, New York. Sept. 14

By good all around TINNER; am temperate and honest and can come at once. Box 247, Colby, Wis. Sept. 14

By SALESMAN with responsible stove foundry, heating or ventilating company; fully qualified; understand drawings and can estimate and superintend; 35 years old; any desired references. Wm. Hill, 417 Locust street, Philadelphia, Pa. Sept. 14

By young married man, position or business opening in retail or wholesale house; nine years' experience as bookkeeper, buyer and general manager in large plumbing, heating and roofing business, together with line of stoves, &c.; have reputation for honesty, ability and energy and can give best of references. "R. H.," care *The Metal Worker,* New York. Sept. 14

Steam and hot water heating apparatus, hot air furnace plants; SALESMAN and ESTIMATOR of many years' experience in New York City desires to change his position; competent as superintendent or manager; practical mechanic. "Heating," 160 Bleecker street, New York. Sept. 14

By PLUMBER with nine years' experience; first-class references; country preferred; wages moderate. "J. E.," care *The Metal Worker,* New York. Sept. 14

By a first-class METAL SPINNER; sober and steady; good all around mechanic; steady position. H. Melsterknecht, 217 East Eighty-fourth street, New York. Sept. 14

As TINNER or CLERK in hardware store; 16 years' experience in store or shop; good workman; sober; state wages; New York State preferred. Box 108, Wilmette, Ill. Sept. 14

FILER and FITTER would accept a job if offered at once; is sober and industrious. "J.," 42 Bradford street, Auburn, N. Y. Sept. 14

SALESMAN would like to travel and sell a line of stoves and hardware; prefer New York or Pennsylvania but would go anywhere; can sell anything that can be sold. "J. M. D.," 42 Bradford street, Auburn, N. Y. Sept. 14

Are you in want of an industrious young DRAFTSMAN and PATTERN CUTTER? Am open for a position September 15 with some large architectural metal establishment where advancement is the reward of hard work; best of references. "A. B.," care *The Metal Worker,* New York. Sept. 14

By a first-class WOOD PATTERN WORKER; have had over 20 years' experience in the stove, range and furnace business and in most of its branches. "L. J.," care *The Metal Worker,* 117-119 South Fourth street, Philadelphia, Pa. Sept. 14

By PLUMBER in city or country; ten years' experience. Thomas McSpedon, 328 East Sixtieth street, New York. Sept. 14

As CUTTER and FOREMAN in cornice and sheet metal works. "L. M. N.," care *The Metal Worker,* New York. Sept. 14

A steady position with a reliable house heating firm as STEAM and HOT WATER FITTER; am strictly temperate and reliable; have been 15 years at the business; please state full particulars. F. P. Corser, 466 Pleasant street, Worcester, Mass. Sept. 7

A young, successful FACTORY MANAGER, familiar with designing and construction of gas stoves and appliances, who has also had entire charge of factory, buying and selling, desires a change of position; is at present employed as manager of one of the best gas stove firms in the country; can give best of references and leave present position on 30 days' notice; able to design and construct any style of gas stove or range desired. Address "Stove Manager," care *The Metal Worker,* New York. Sept. 7

As PLUMBER and GAS FITTER; wages moderate. Patrick Marron, New Paltz, Ulster County, N. Y. Sept. 7

TINSMITH wishes steady position; understands roofing, furnace work and plumbing, range work and general jobbing. B. F. Darling, Port Jefferson, N. Y. Sept. 7

A strictly sober and reliable mechanic, qualified to do FURNACE WORK, TINNING, PLUMBING, STEAM or HOT WATER HEATING; have done some bell work and local telephones; can estimate and lay out work; have had charge of a shop and store and understand general business methods; could furnish a good set of tools for any of the above branches; could begin at once. "Competent," Box 33, East Stroudsburg, Pa. Sept. 7

By a young man as PLUMBER and TINSMITH'S HELPER in town or city on Hudson River; quick to learn and willing to work; have had some experience and can furnish best of references. "B.," 277 Main street, Catskill, N. Y. Sept. 7

By an experienced STOVE SALESMAN, a position with good firm; New England territory preferred; a temperate young man and a hustler; let me hear from you. "Business," care *The Metal Worker,* New York. Sept. 7

By a first-class PLUMBER, TINNER and GAS FITTER, with some knowledge of steam and hot water work; steady position; strictly temperate and reliable. "Steady," care *The Metal Worker,* New York. Sept. 7

PLUMBER, strictly first-class, desires steady work in city or country, South preferred; 24 years' experience; understand plans; take charge or work journey work and study employer's interest; honest, sober and reliable and can furnish best reference. Wm. Murphy, 475 East 115th street, New York. Sept. 7

Steam and hot water fitter of experience wishes a steady position as MANAGER of a first-class heating construction firm; understand plans and specifications; can estimate, close contracts, lay out the plant and take full control of construction; competent upon the different systems; references. "Ed," care *The Metal Worker,* New York. Sept. 7

PLUMBER, GAS, STEAM and HOT WATER FITTER wants a steady position in charge; able to estimate, manage mechanics, lay out the work; thoroughly competent on sanitary work, the general construction of heating or power work; experienced; understand plans and specifications; references. "Joe," care *The Metal Worker,* New York. Sept. 7

A first-class STEAM and HOT WATER FITTER; can do all kinds of general jobbing; 12 years' experience; good reference. "H.," care *The Metal Worker,* New York. Sept. 7

Young man (32) who has been brought up in the trade and has had an extensive experience in the designing and superintending of steam and hot water plant for fine residences, churches and institutions, and also in power work and the designing and installing of various economical plants for manufacturing purposes, desires a change of position; accustomed to handling men and can furnish A1 reference. Address, with particulars, "Experience, 97," care *The Metal Worker,* New York. Sept. 7

By a PLUMBER with 20 years' experience, steady position anywhere. In the South preferred. "R. B.," care *The Metal Worker,* New York. Sept. 7

FOR SALE.

Stove Foundry in the midst of the best territory in Michigan 20,000 square feet of floor space 1,500 stoves made last year. Output will be lnrger this. Buildings and grounds cost $9,000. Engine and machinery, patterns and appliances cost $8,000. All in first-class condition. Will be sold for one-fourth its actual value. Death of the builder is the cause.

Address BOX 135, care *The Metal Worker*,
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FOR SALE.

At a bargain. Plumbing and Tinsmith's shop and store of Hardware and Housefurnishing goods. Established 1866. Fine location Good business. Work on hand. Death of owner cause.

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50 gallons Harbaugh's Enamel Graphite Paint, suitable for Felt Roofers' work.

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FOR SALE.—Good paying Cornice and Sheet Metal shop in one of the best towns (13,000) in Iowa. Plenty of work and good opportunity to increase business. Good reason for selling. Two story brick, second floor finished in modern eight room flat. Sell or rent building Address BOX 133, care *The Metal Worker*, Fisher Building, Chicago.

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Tin and Stove or Hardware store, in country or village. Will give in exchange a country hotel, furnished, doing a very profitable business, together with 8 acres of land and orchard. A chance of a lifetime. Fullest investigation.

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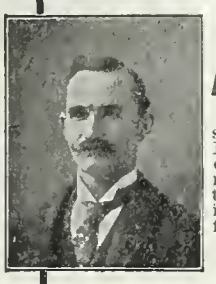

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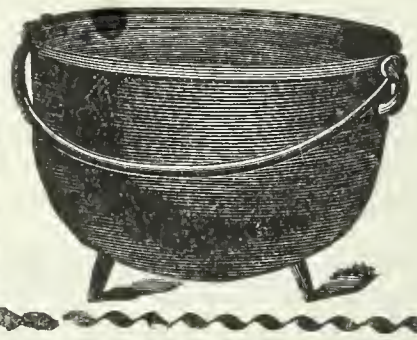

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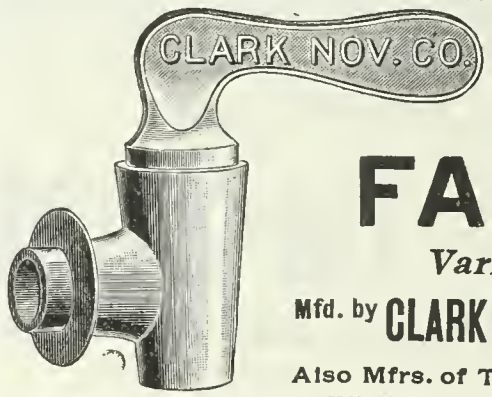

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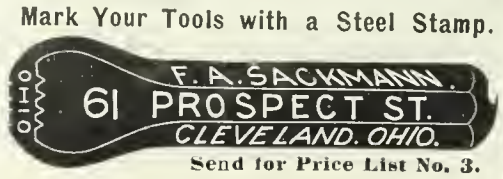

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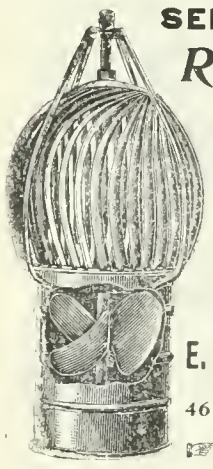

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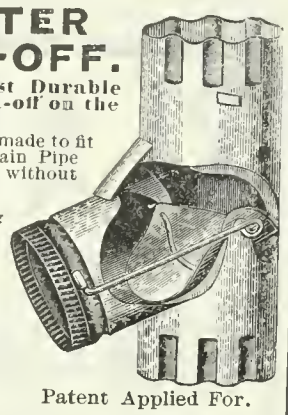

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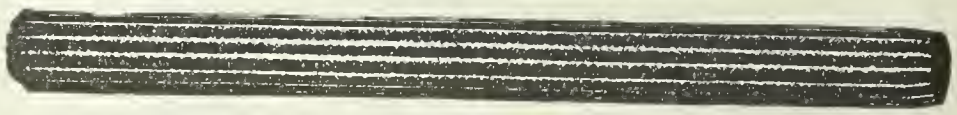

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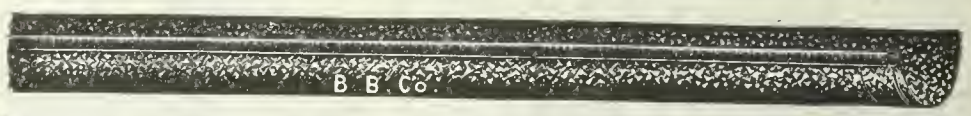

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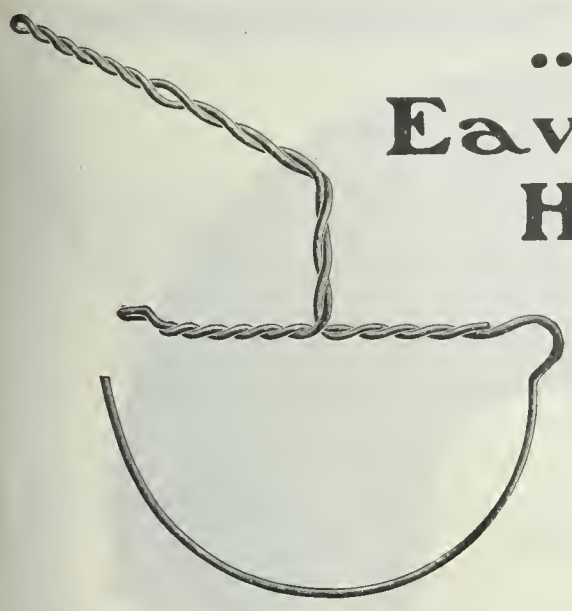

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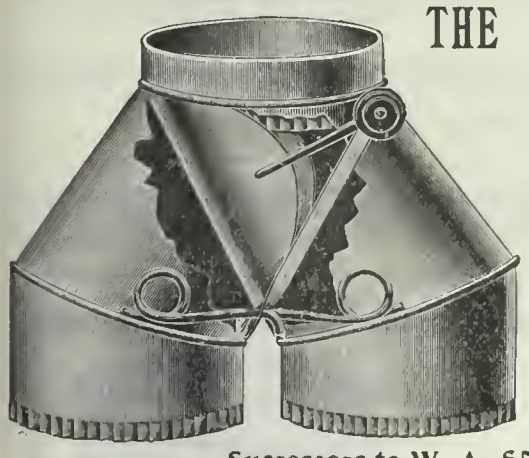

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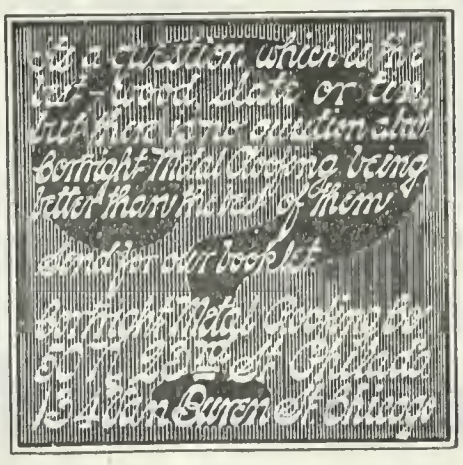
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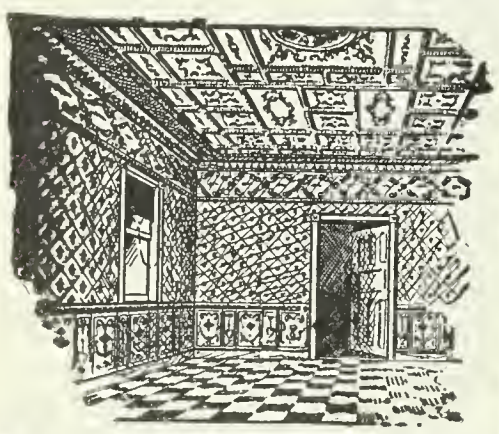

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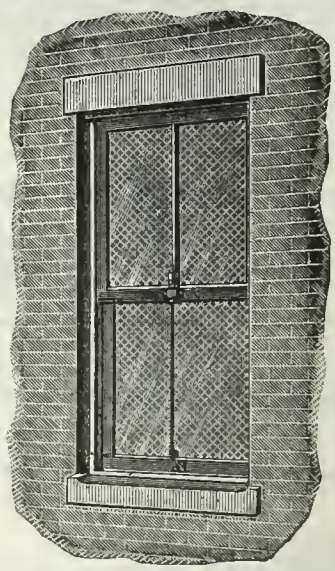

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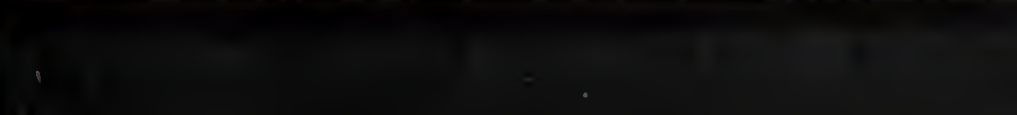

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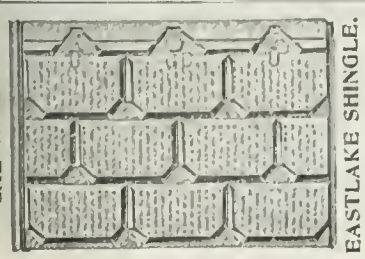

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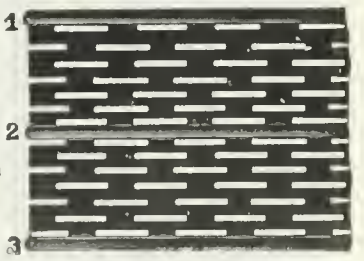

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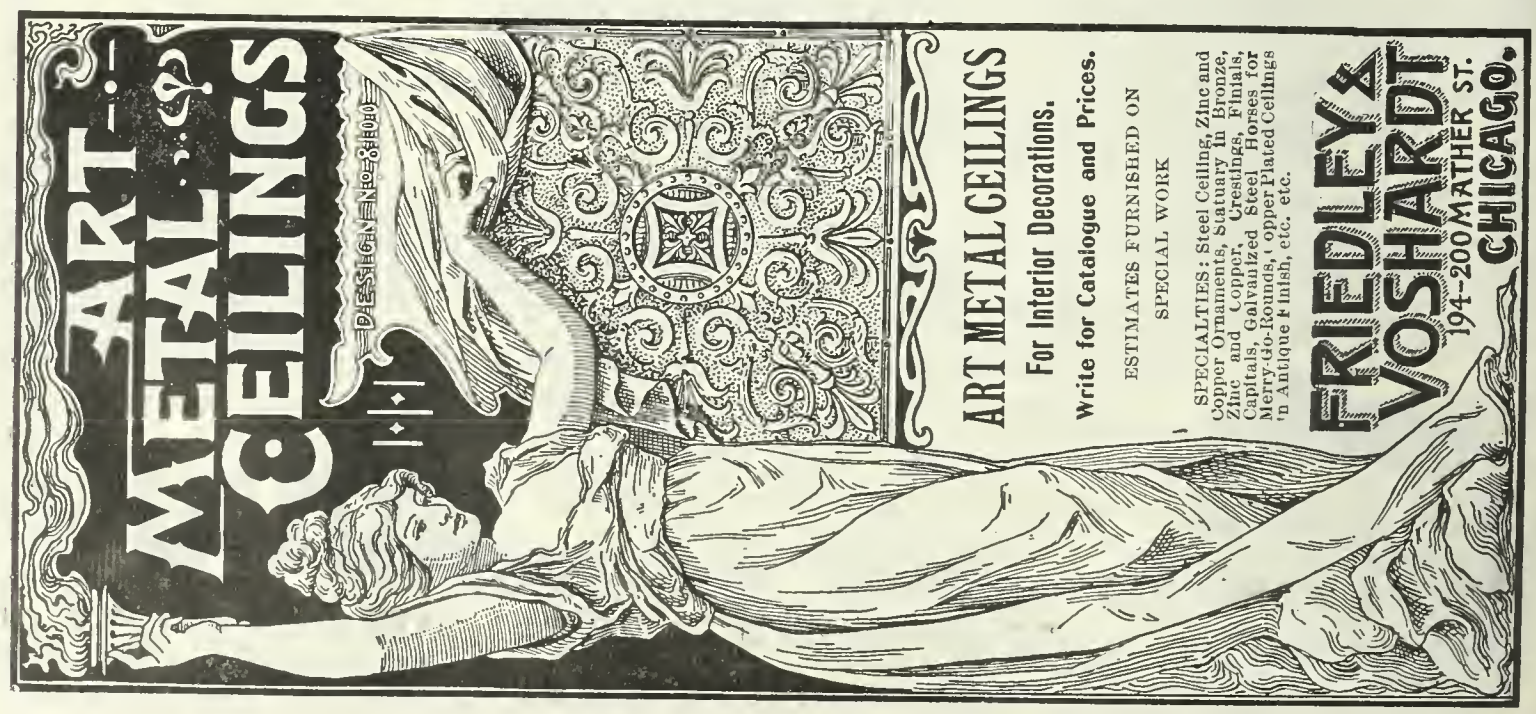
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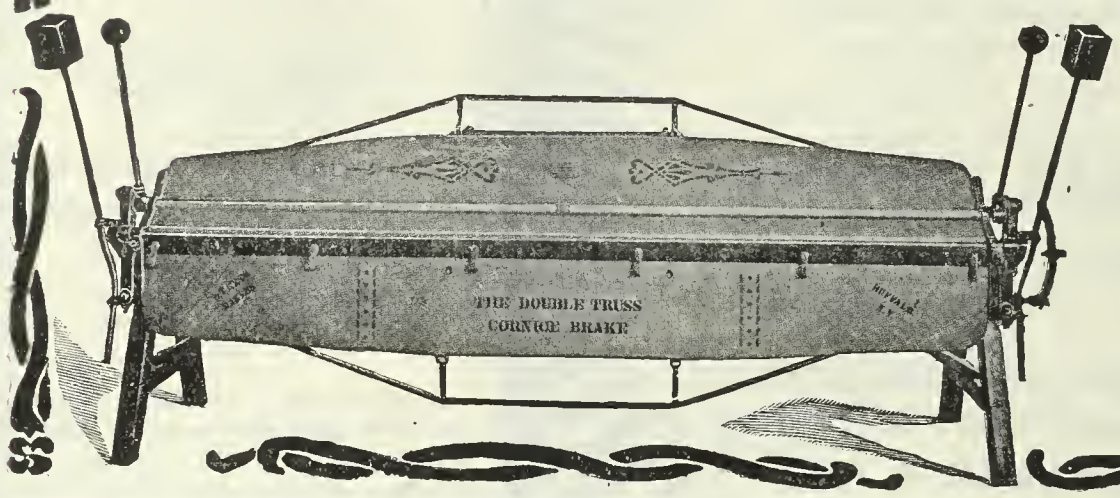

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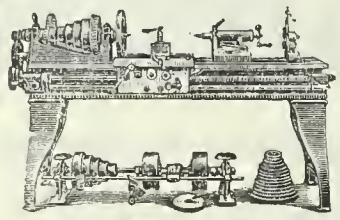

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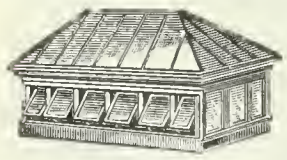

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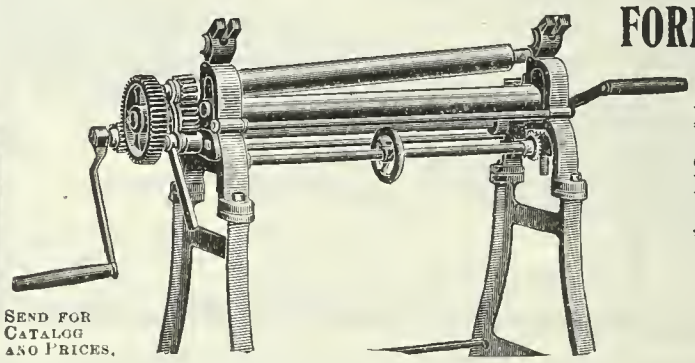

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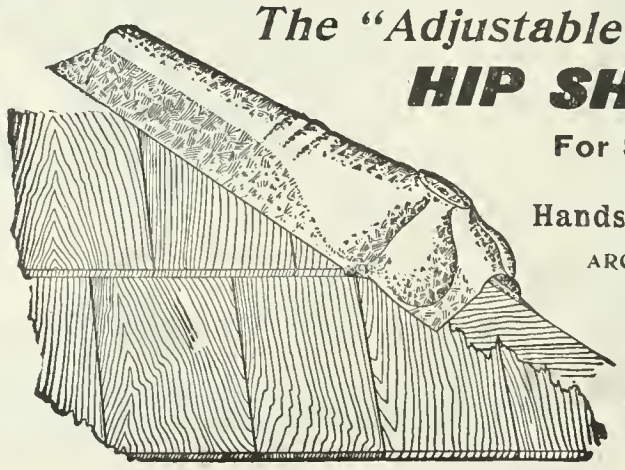

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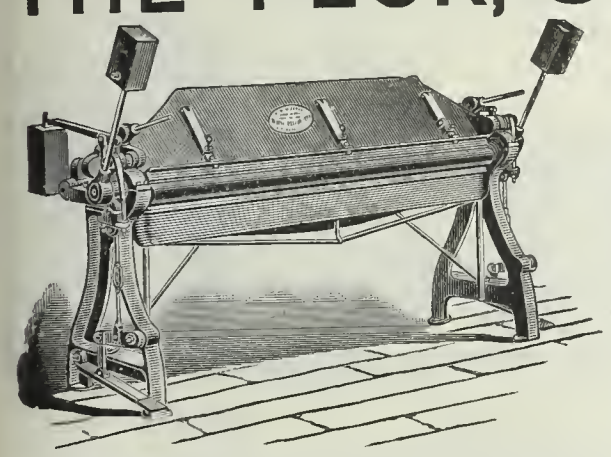

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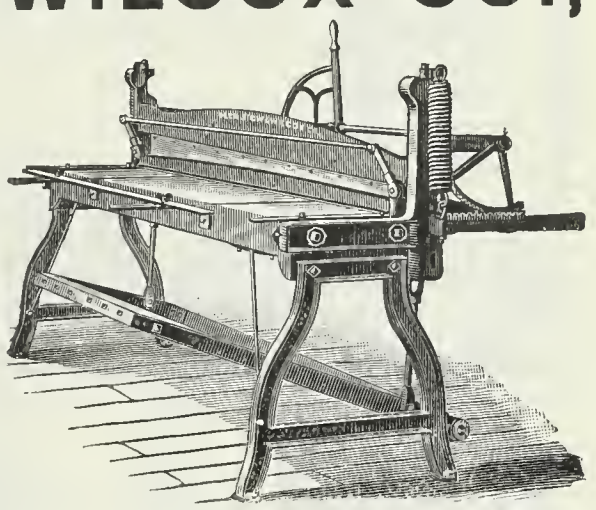

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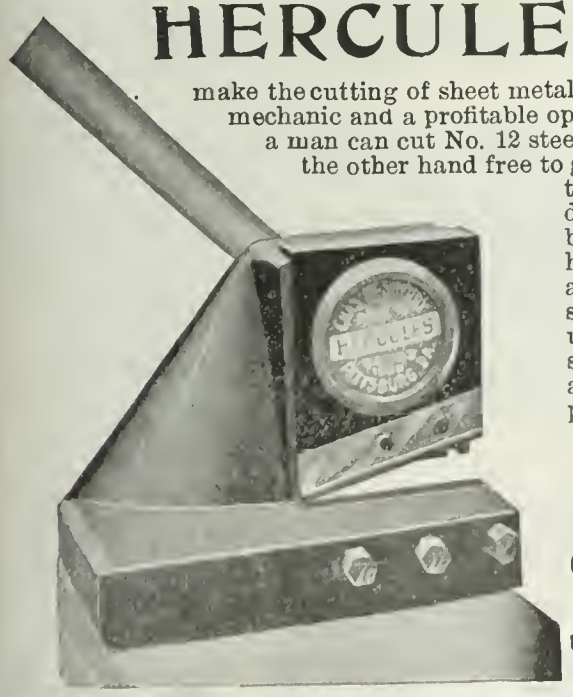

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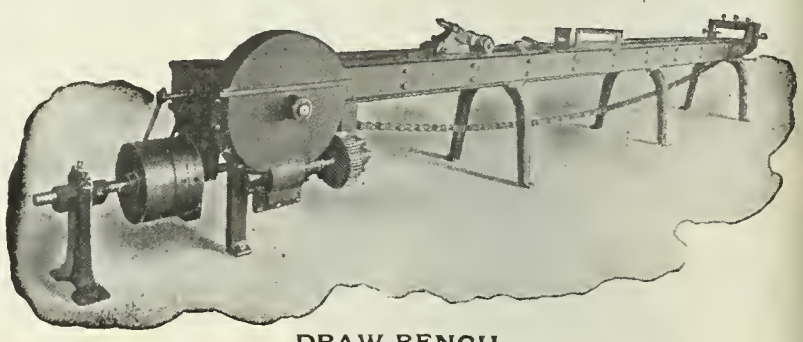

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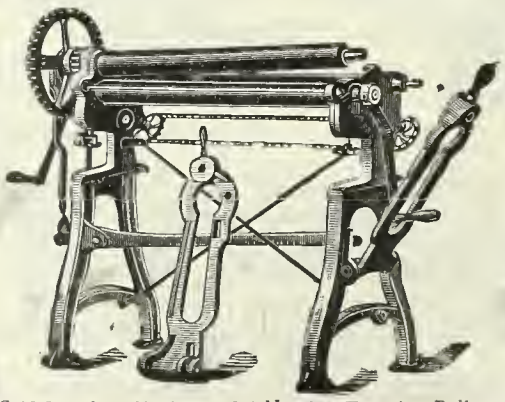

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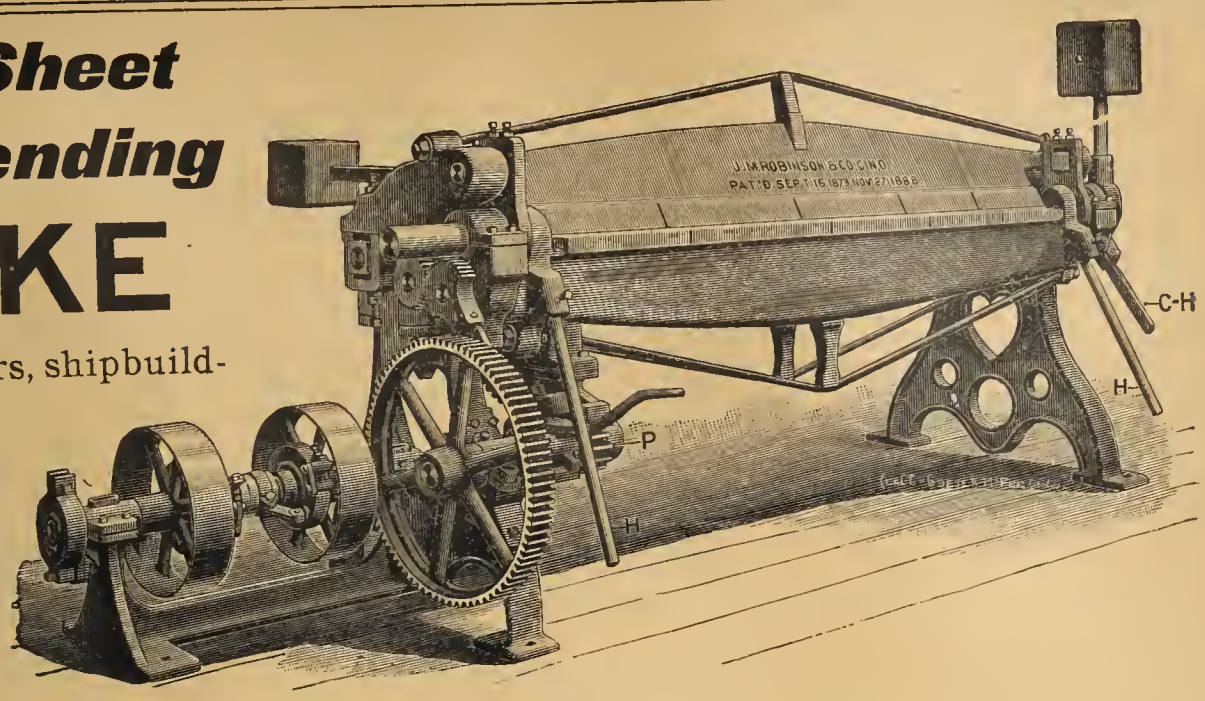

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225-229 W. Second St., - - - - - CINCINNATI, O.

STOVE AND RANGE MAKERS'

Machinery for the Production of Iron Roofing a specialty.

Geo. C. Keene & Co.,

CINCINNATI, OHIO.

Makers of the Keene Cornice Brake.

Flanging Machine.

W. R. OSTRANDER & CO.,

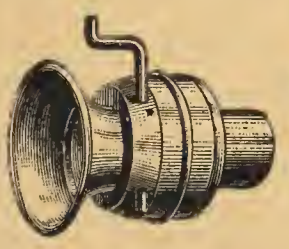
22 DEY STREET, NEW YORK

Manufacturers of

Speaking Tubes, Whistles, Elbows, Oral Annunciators, Bell and Electric Wire Tubing.

Complete outfits of Speaking Tubes, Whistles, Pneumatic Bells, &c. A full line of Speaking Tube Hardware constantly on hand. Factory, DeKalb Ave., near Knickerbocker, Brooklyn, L. I.

CATALOGUES ON APPLICATION.



TELEPHONE, 2144 FRANKLIN.

U. T. HUNGERFORD BRASS & COPPER CO.,

121 WORTH STREET, NEW YORK.

CARRY IN STOCK

Soft and Cold Rolled Sheet Copper

For Roofing and Cornice Trade, all sizes and weights.

SOFT SHEET COPPER

30 x 60 in. and 48 x 72 in., from 1 lb. to 12 lbs. per square foot, for Coppersmith's use.

TINNERS' AND COPPERSMITHS' SOLDER.

IMPROVED

Patent Automatic Can Body Double Lock Seaming Machines.

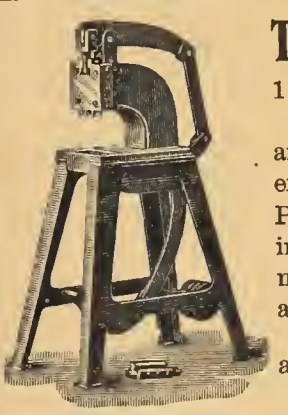
COMBINATION

Presses and Dies, Sheet Metal Tools, &c.

W. J. GORDON

218 New Street

PHILADELPHIA, PA.



THIS Press has an adjustment of 1 in. to slide.

Stroke is positive and for many operations such as Punching, Shearing, Stamping, &c., makes a desirable and valuable tool.

Send for circular and prices.

Adjustable Foot Press.

R. M. CLOUGH,

TOLLAND, CONN.

—HE STILL SHAVED.—"I think I'll run around to Jake's barber shop and get shaved," said the returned traveler. "There's no barber shop there, now; Jake's become very prosperous since you left." "Moved, has he?" "No; but he transformed his shop into a 'shaving parlor,' and then a 'tonsorial studio,' and now it's the 'capillary art atelier (Inc.),' of which he is president."—*Philadelphia Press.*

—COULD KEEP OVER IT.—I entered the place trustingly, as is my wont.

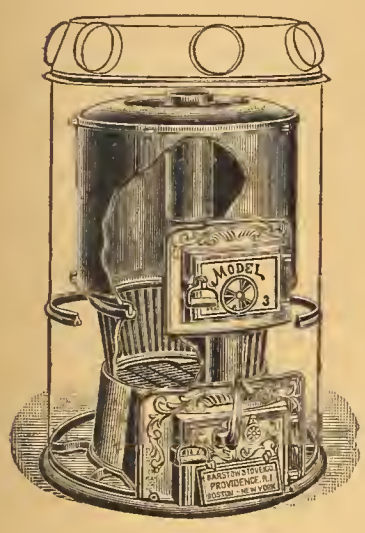
"I should like to look over your collars," said I.

"Alas!" giggled the haberdasher, "I fear your neck is too short!"

For, in despite of our vast commercial expansion, there are still among us those who would rather be bright than succeed in business.—*Detroit Journal.*

. . . THE . . .

MODEL FURNACE.



Has . . .

LARGE RADIATING SURFACE.

HEAVY TRIANGULAR GRATE.

LARGE DOUBLE DOOR

For burning wood.

SEND FOR CIRCULAR.

BARSTOW STOVE COMPANY,

BOSTON, 55 Portland St.,

PROVIDENCE, R. I.,

NEW YORK, Beekman and Water Sts.

We Solicit Your Orders

. . . FOR . . .

Sept., Oct. and Nov. Shipments.

IC 28 x 20 ternes, all weights.
IC 28 x 20 coke tin, full weight.
200 lbs.
190 lbs.
180 lbs.
160 lbs.

Galvanized Sheet Iron,
Black Sheet Iron,
Solder, Wire, Zinc, etc.

N. & G. TAYLOR CO.,

Manufacturers,

TIN AND TERNE PLATES.

PHILADELPHIA.

FOR OFFICE BUILDINGS

Frink's Cluster Reflectors for from three to eight lights will light offices more brilliantly, evenly and economically than any other fixture. Their extreme durability and power make them the cheapest to buy.

I. P. FRINK, 551 Pearl St., New York.

L. & R. WISTER & CO.,

Bullitt Building, Philadelphia.

Dunbar Foundry Pig Iron.
Dunbar Connellsville Coke for Foundry Use.
American Sheet Iron Co.'s Sheet Iron.
American R. G., cleaned. of uniform black color.
Dealers in all kinds of Iron and Steel Scrap

BRUCE & COO

TINNERS'
TOOLS and MACHINE

TINNERS' SUPPLIE

186, 188 & 190 Water Street,
248 & 250 Pearl Street,
NEW YORK.

UTICA PIPE FOUNDRY CO.

"UTICA PIPE IS THE BEST." Cast Iron Soil Pipe. Cast Water Pipe. Plumbers' Supplies and Lead Pipe.

CHARLES MILLAR & SON CO., Selling Agents, Utica, N.

Oven Capacity

is one of the principal requirements in a modern range. This is increased 50 per cent. in the

MODEL HUB

With Steel Oven,

by baking on oven bottom and oven rack at same time.

NO CHANGING OF FOOD NECESSARY.

SMITH & ANTHONY CO., Boston.

Don't You Admire

the man who stands right up in his boots and tells you that he don't claim to sell the lowest priced goods in town, and the next minute takes off his coat and proves to you that when quality and service are considered his goods are cheapest after all? Yes! **you admire him** and **you buy of him,** and a good many of those kind of men sell

GLENWOODS.

Write the Weir Stove Co., Taunton, Mass.

ATTENTION.

SEE PAGE 59.

McCLURE & CO.,

Manufacturers of Tin Plate,

PITTSBURGH, PA.
211, 213 and 215 Second Ave.

PHILADELPHIA, PA.
115 North 7th Street.

Index to Reading Matter, Page 62

Index to Advertisements, Pages 64 66.

The Metal Worker

A WEEKLY JOURNAL OF THE ROOFING, CORNICE, STOVE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

Vol. XXXIII. No. 12. NEW YORK AND CHICAGO, SEPTEMBER 21, 1901. ONE DOLLAR A YEAR. SINGLE COPIES 5 CENTS.

WILLIAM M. NEWTON,
Albany, N. Y.
Fire Brick Stove Linings
HIGH GRADE. LOW PRICE.
Also **Plastic Iron Stone Stove Lining**
In Bags or Barrels. Send for Prices.

The Gorton Side Feed Boilers
FOR STEAM AND HOT WATER HEATING.
INVESTIGATE FOR YOURSELF.
Send for Catalogue and Prices.
GORTON & LIDGERWOOD CO.,
96 Liberty St., NEW YORK. Old Colony Bldg., CHICAGO
77 Oliver St., BOSTON. Prudential Bldg., ATLANTA, GA.

STOVE LININGS
McLEOD & HENRY CO.,
TROY, N. Y.

Diamond Thimbles.
S. CHENEY & SON,
Manlius, N. Y.

Paragon Point No. 3.—LARGEST RADIATING SURFACE.

The Paragon Furnace has more square inches of radiating surface, per size, than any other hot air furnace. There are three drums, every square inch of which is reached by the products of combustion. Then, too, the Paragon has the additional heating surface afforded by the upper radiator, which is absent in other makes.

This point means that the Paragon gives an abundance of pure, warm air, and not the small quantity of overheated, parched air given out by other furnaces.

ISAAC A. SHEPPARD & CO.
NEW YORK PHILADELPHIA BALTIMORE

APOLLO BEST BLOOM GALVANIZED IRON

There is more profit on it all concerned than on any other iron.
To the makers, because they make more of it.
To the sellers, because they sell more of it.
To the workers, because it takes less time for a job.
To the owners, because it makes a good job

American Sheet Steel Company
Battery Park Building
New York

A STOVE is a bulky piece of goods and therefore must move quickly to return a good profit. One sample **P. P. STEWART OAK** WOULD BRING YOU LOTS OF ORDERS.
Don't let it go off your floor—so order two.
FULLER & WARREN CO., Troy, N. Y.

FOLLANSBEE BROTHERS CO.,
328-330-332 Second Ave.,
Galvanized and Black Sheets.

The best made Sheet Copper and Copper Bottoms at lowest mill price. Manufacturers Roofing Tin Plates.

Philadelphia Branch,
133 Arch Street,
S. V. Reeves, Manager.

"KITCHEN BOILER CONNECTIONS" —EXPLAINS THE— PRINCIPLES —OF— Piping Boilers
FIFTH EDITION
Price, $1.00
David Williams & Co.,
232 William Street, N. Y.

CROSBY SPRING-SEAT
GLOBE and ANGLE VALVES, IRON and BRASS.
All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.
Crosby Steam Gage & Valve Co.,
BOSTON: 95 Oliver St. NEW YORK: 78 John St. CHICAGO: 21 23 W. Lake St.

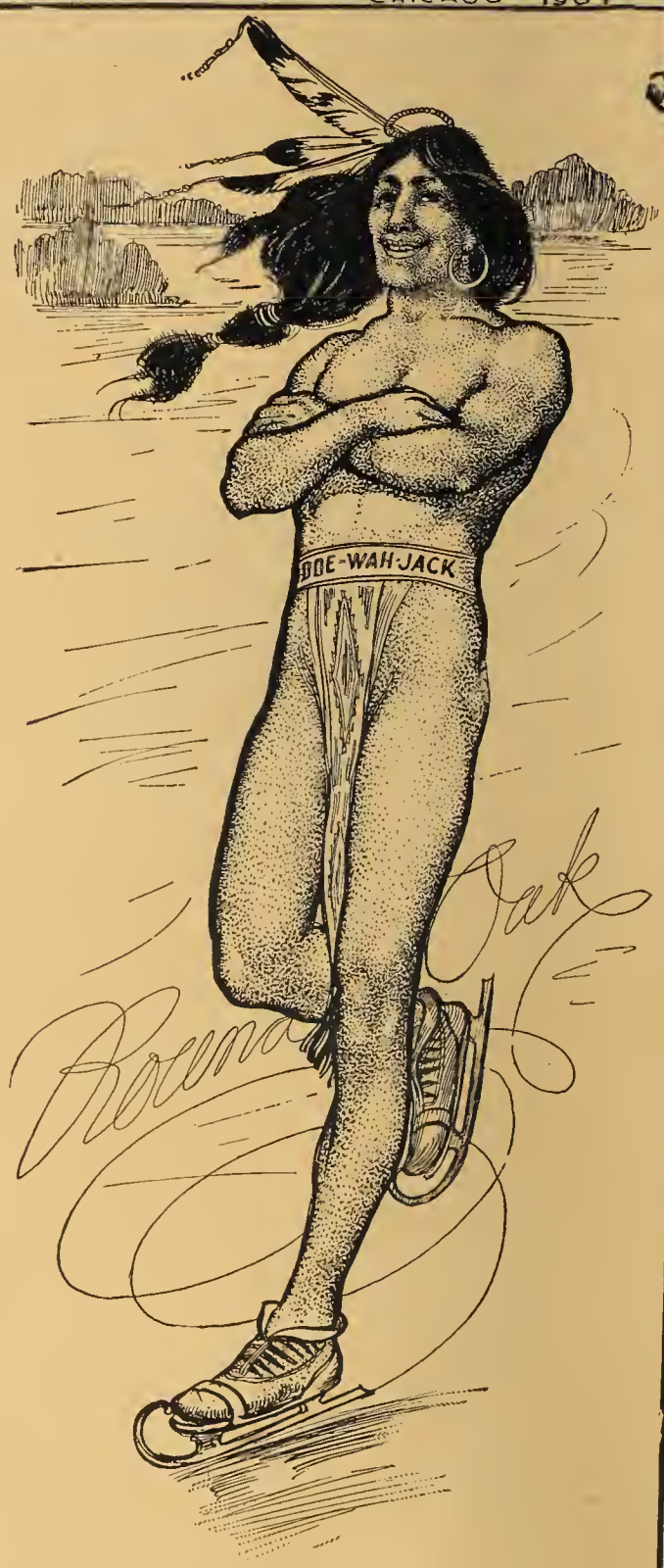
Steam Specialties.
RELIEF and NOISELESS BACK
ELEVATOR VALVES, PRESSURE VALVES,
STEAM TRAPS, PUMP GOVERNORS,
STEAM AND WATER STEAM and OIL SEP-
REDUCING VALVES, ARATORS.
SINK TEMPERATURE CONTROLLER and
No. 1 DAMPER REGULATORS'
KIELEY AND MUELLER,
17 W. 13th St., NEW YORK.

Jenkins Bros.' Valves
are manufactured of the best steam metal, and are fully guaranteed. Why experiment with cheap valves? If you want the *BEST* ask your dealer for valves manufactured by Jenkins Brothers. Remember all genuine are stamped with Trade Mark like cut.
JENKINS BROTHERS, New York, Philadelphia, Chicago, Boston.

READ OUR "AD"
Page 12.
MAGEE FURNACE CO.,
Boston.

ROUND OAK
STANDARD OF AMERICA

CYRTIS GANDY DEL CHICAGO 1901



We know price

cuts a great figure in the furnace business.

In fact price is about all one hears. But the area of good furnaces and good furnace work is here.

You might as well get ready for it.

Estate of

P. D. Beckwith
Dowagiac, Mich.

MAKERS OF GOOD GOODS ONLY

38

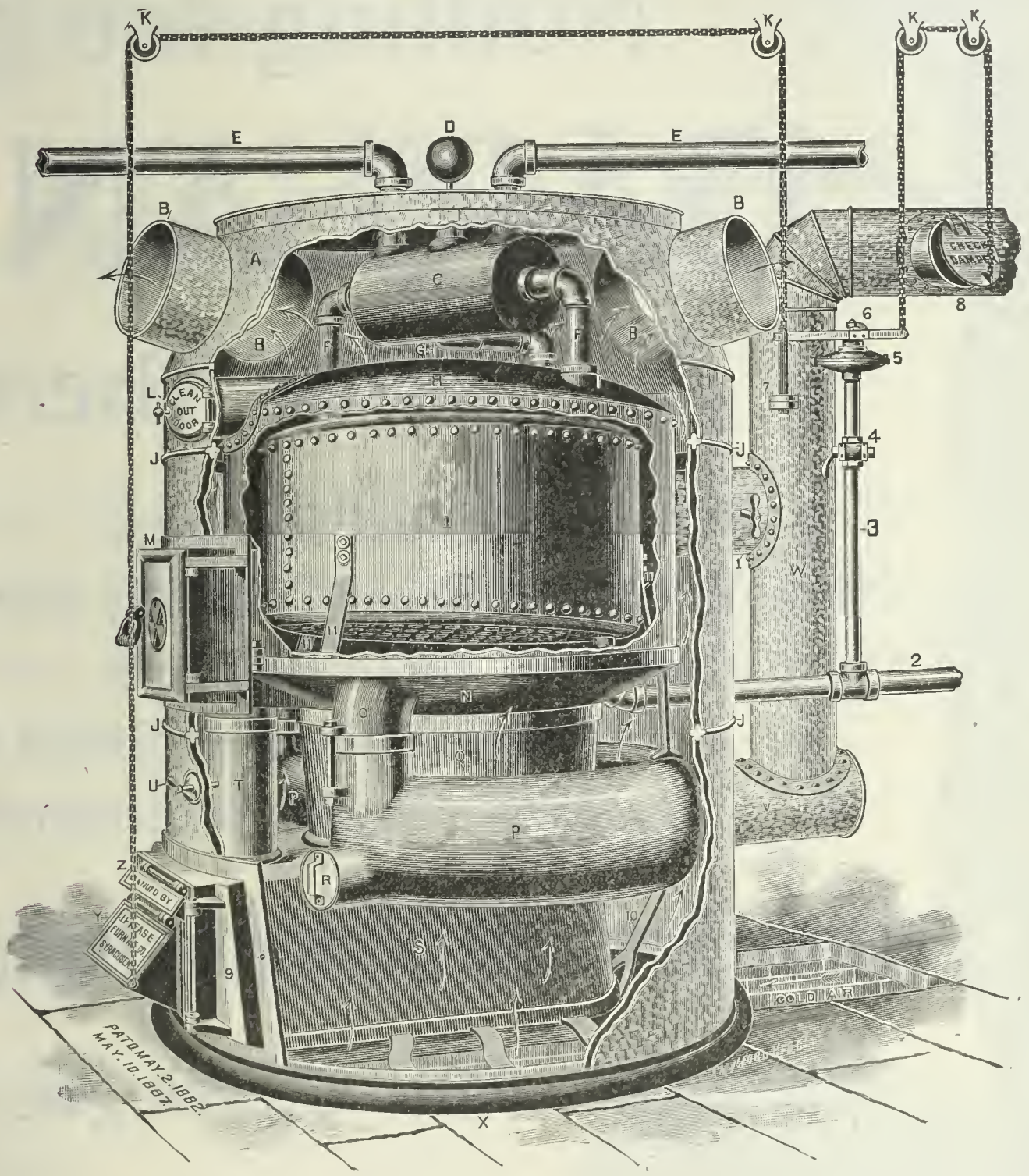
HB CHICAGO

Theory and Practice agree in the Pease Combinations.
They are machines in the highest sense—true converters of energy.

The Pease-Economy Combination

FOR STEAM AND WARM AIR.

LOW DOWN PATTERN.



THESE ARE THE IMPROVED FORMS OF THE ORIGINAL PEASE COMBINATIONS:

First on the Market, Most Widely Sold, Most Favorably Known.

(THIS IS NOT MERELY PRINTER'S INK. IT'S FACT.)

International Heater Co.,

UTICA, N. Y.

BOSTON, NEW YORK, CHICAGO, DENVER.

Largest Makers of Heaters in the World.

First Prize Paris, 1900.

GA... S... R...

The...

Nothing too

"GARLAND

For the Se

New Models of Steel Ranges.
New Models of Steel Cooking Stoves.
New Models of Base Burners.
New Models of Sheet Iron
New Models of Sheet Iron

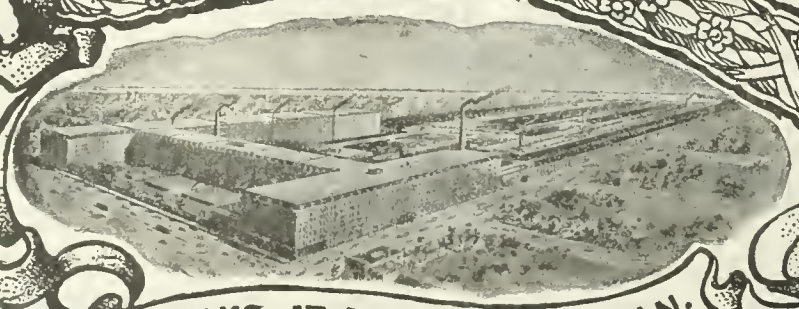
More New and Desirable Patterns

Our New Catalogue is y

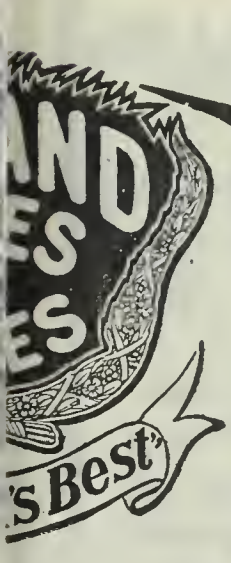
The Michigan

Largest makers of Stov

DETROIT. C



WORKS AT DETROIT, MICHIGAN.



Good for AGENCIES

son of 1901.

New Models of Cast Ranges.
New Models of Cast Cooking Stoves.
New Models of Oak Stoves.
:aters for Coal (Hot Blasts).
aters for Wood (Air Tights).

han Have Ever Before Been Offered.

urs for the asking.

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tove Company,

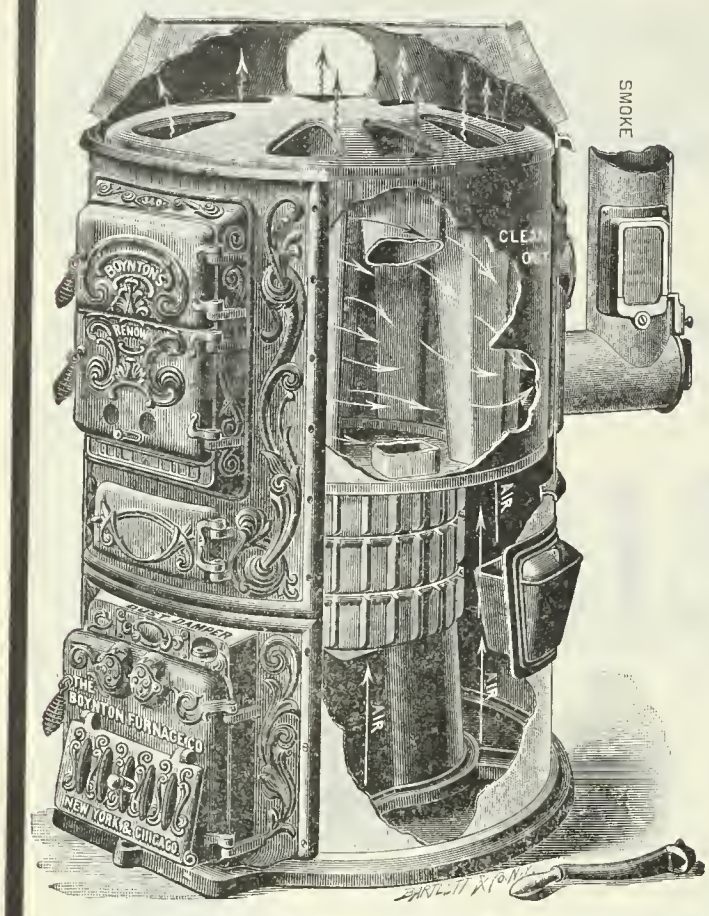
and Ranges in the World.

AGO. BUFFALO.

WESTERN HEADQUARTERS, CHICAGO.

BOYNTON'S "RENOWN"

PORTABLE FURNACE



A new and distinct type of construction thoroughly tried and tested. Possessing more area of heating surface to area of grate surface than any other furnace manufactured.

Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

The **BOYNTON FURNACE CO.,**

NEW YORK, CHICAGO.

The Monitor Base Burner

High Art Series.

Positively the most powerful Heater made.

Most novel in construction.

Embodying more salable features than any other.

Possessing greater heating circulation than any other.

A thoroughly up-to date heater.

Send for complete description.

Secure the agency at once.

The WM. RESOR & CO.,

CINCINNATI,
U. S. A.

QUICK MEAL

They Build Up Your Trade!

They Make You Friends!

They Hold Your Customers!

RINGEN STOVE Co. SAINT LOUIS

Model Steel Range

For Hard Coal, Soft Coal or Wood.

They are **Models** of all the good things, useful and beautiful, that can be embodied in a modern range. Their popularity, on account of their many good points, has led many imitators to copy them as near as they dare, but as the oven doors, dampers, fire-box and other features are covered by patents, the imitations are still behind in the race, so far as construction and operation are concerned, and we feel confident that a comparison will result in a most favorable impression as to our claim that they are **Models of Beauty** and just the one range above all others that it will pay the dealer to handle. The large and constantly growing trade we enjoy on the **Model Steel Range** has been built up purely on its merits and not through a lot of extravagant "fake" advertising.

Write for prices and discounts.

The Portsmouth Stove & Range Co., Portsmouth, O.

MORLEY BROS., Saginaw, Michigan, Agents for Northwest.

THE BUSIEST MAKERS OF STOVES & RANGES IN THE WORLD

WROUGHT STEEL

RANGES

LIKE THE

"PACIFIC"

Are best because they're made stronger, better, more perfect than any other similar construction. You should write for prices and secure our Catalogue.

It is made with High Closet, Rolling Front, Six Holes, for Hard or Soft Coal; is the latest, best and handsomest Steel Range ever offered, one that you can offer as simply "out of sight" compared with that sold by the peddlers. Try it.

...THE...

JOHN VAN RANGE CO.,

Warerooms:—419 ELM ST.,

Factories:—6-8-10 and 12 HOME ST.,

CINCINNATI, O.

CRAWFORD
RANGES and OAKS
With the Latest Novel Features.

Our Oak outsells all others. It is fitted with either draw-centre or triangular grate, a deep ashpit and a real ashpan. Prices may attract you.

This new range has more talking points than any two ranges of other makes. Send for circular and read about our removable nickel rails.

Walker & Pratt Mfg. Co.,

Finest Stove Foundry in the World.

31-35 Union Street, - - BOSTON, MASS.

Artistic Enameled Steel Ranges.

ALWAYS BRIGHT, NEAT AND CLEAN.

Do not confuse ***Artistic Enameled Steel Ranges*** with the ordinary black baked Japan used on other ranges.

The "ARTISTIC" is the only enameled range on the market.

You should see a sample. Can be washed with soap and water.

Artistic, practical; the best steel range.

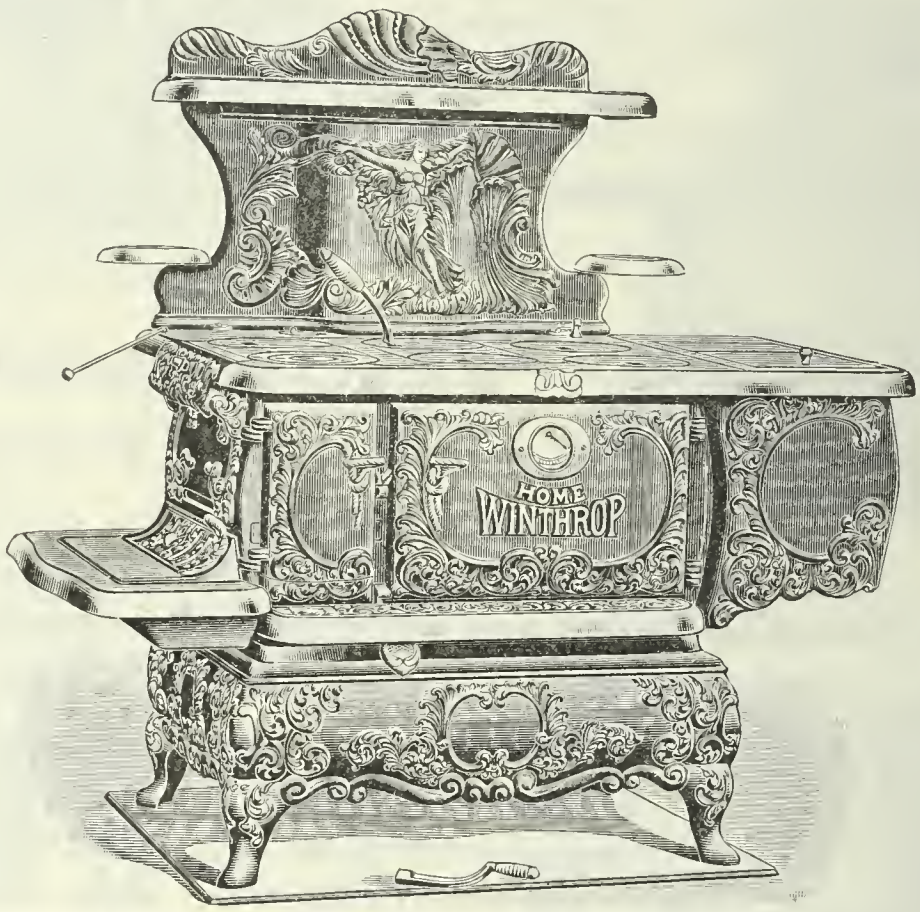
SEND FOR DESCRIPTIVE CIRCULARS AND CATALOGUE.

Artistic Enameling Works, - - St. Louis, Mo.

THE "HOME WINTHROP" has every modern attachment that is of any practical use, common to other first-class ranges.

The "HOME WINTHROP" requires one-third less fuel than any other range and bakes just exactly as well in the afternoon with an old fire as in the morning with a new fire.

ALL of FIVE SIDES of the oven are heated and heated evenly.



In selling the average modern range, some far-fetched argument is necessary, one make not being essentially different from twenty others; the greatest value in any of them could be changed in two minutes by changing the name on the oven door.

The "HOME WINTHROP" is constructed differently and there are good common sense REAL reasons why it will and does do better and more economical work.

The price is 20% less than other ranges having the same fire box and oven measurements are sold for.

DIGHTON FURNACE CO., Taunton, Mass.

Moore's Air-Tight Heater

Ground Joints Make Perfect Air-Tights

Much of the success of Moore's Air-Tight Heater, lies in the perfection of the base door, all joints being ground to within $\frac{1}{1000}$ of an inch of actual contact.

The lever by which the draft slide is operated is also an exceedingly satisfactory device, as it enables one to accurately register the admission of air, and gives complete control of the fire.

JOLIET STOVE WORKS,

JOLIET, ILLINOIS.

32

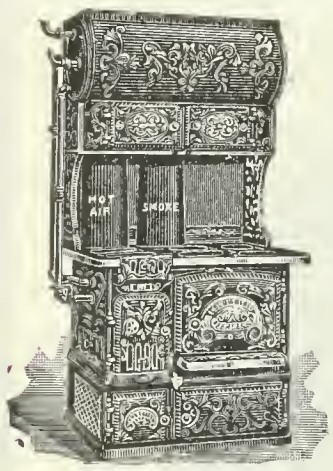
CATALOGUES SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

DEALERS, BUILDERS AND OWNERS



Should secure our Line of Goods. They will then have the Best on the Market.

The Columbian Banner, Comet, Prince and Climax Furnaces, and the Columbian Peerless, Victor, Newport, Star and Triumph Ranges are all substantial, efficient and economical.

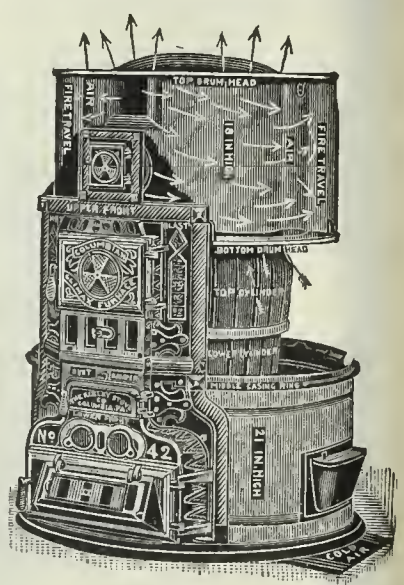
ALL KINDS OF WOOD AND COAL

Airtights, Base Burners, Globe and Cylinder Stoves, Gasolene and Oil Stoves.

Write us for full information and catalogues.

THE KEELEY STOVE CO.,

COLUMBIA, PA.



COLUMBIAN LINES.

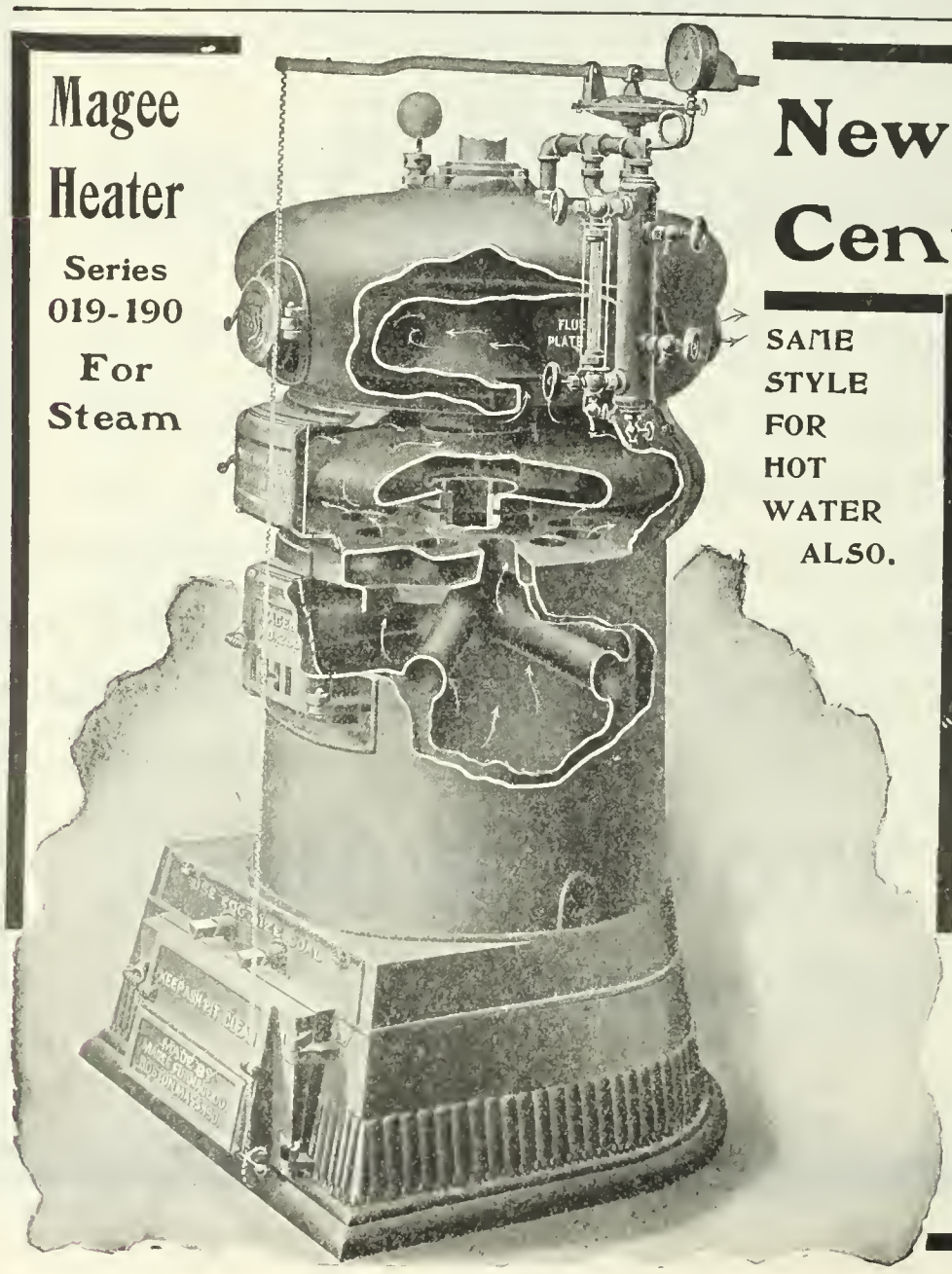
Chicago Branch: JACOB RETTERER, 167 and 169 Lake St., Chicago, Ill.

COLUMBIAN LINES.

Magee Heater

Series 019-190

For Steam



SAME STYLE FOR HOT WATER ALSO.

New Twentieth Century Heater

MANIFEST ADVANTAGES.

Fire pot and water tubes. Large, direct fire surface. Vertical circulation. Large flue areas assure a combining of the gases and full value of travel under slow combustion.

Note travel of dome (7 feet). Simplicity of construction, ease of installation, and many more advantages.

Write us.

Magee Furnace Co., 32-38 Union St., BOSTON.

Steam and Hot Water Heaters, Warm Air Furnaces, Combination Warm Air and Hot Water—Ranges—Stoves. Largest line under one name in the United States.

JEWEL STOVES AND RANGES..

JEWEL STOVES AND RANGES
DETROIT STOVE WORKS
LARGEST STOVE PLANT IN THE WORLD

A Complete, Well Advertised Line;
Low Prices and Good Workmanship.

Please Write for Catalogue.

DETROIT STOVE WORKS.

Detroit - Chicago.

Up-to-date Air-Tights.

COSEY—Style C. HOT BLAST.

We Want Your Business!

Our Goods Are Strictly HIGH-GRADE and DURABLE.

We Make 65 Styles and Sizes of AIR-TIGHT HEATERS.

Our Heaters are made of Blue Polished Steel. Superior Finish. Best Proportioned Stoves made. Our Castings are Smooth. Our Mounting is perfect.

Screw Draft, Spark Arrester, Extra Heavy Linings, Plate in Cover, Hinged Cover, Reinforced Tops that will not Warp.

Fuel Opening made with Wire Edge, preventing buckling and getting out of shape.

Bottoms Double Seamed. Feet Bolted to Cleats underneath Stove to prevent slipping.

Large Capacity. Prompt Shipment GUARANTEED.

Quincy Foundry & Novelty Co.,

QUINCY, ILL.

Write for Catalogue and Prices.

ROYAL—Style A.

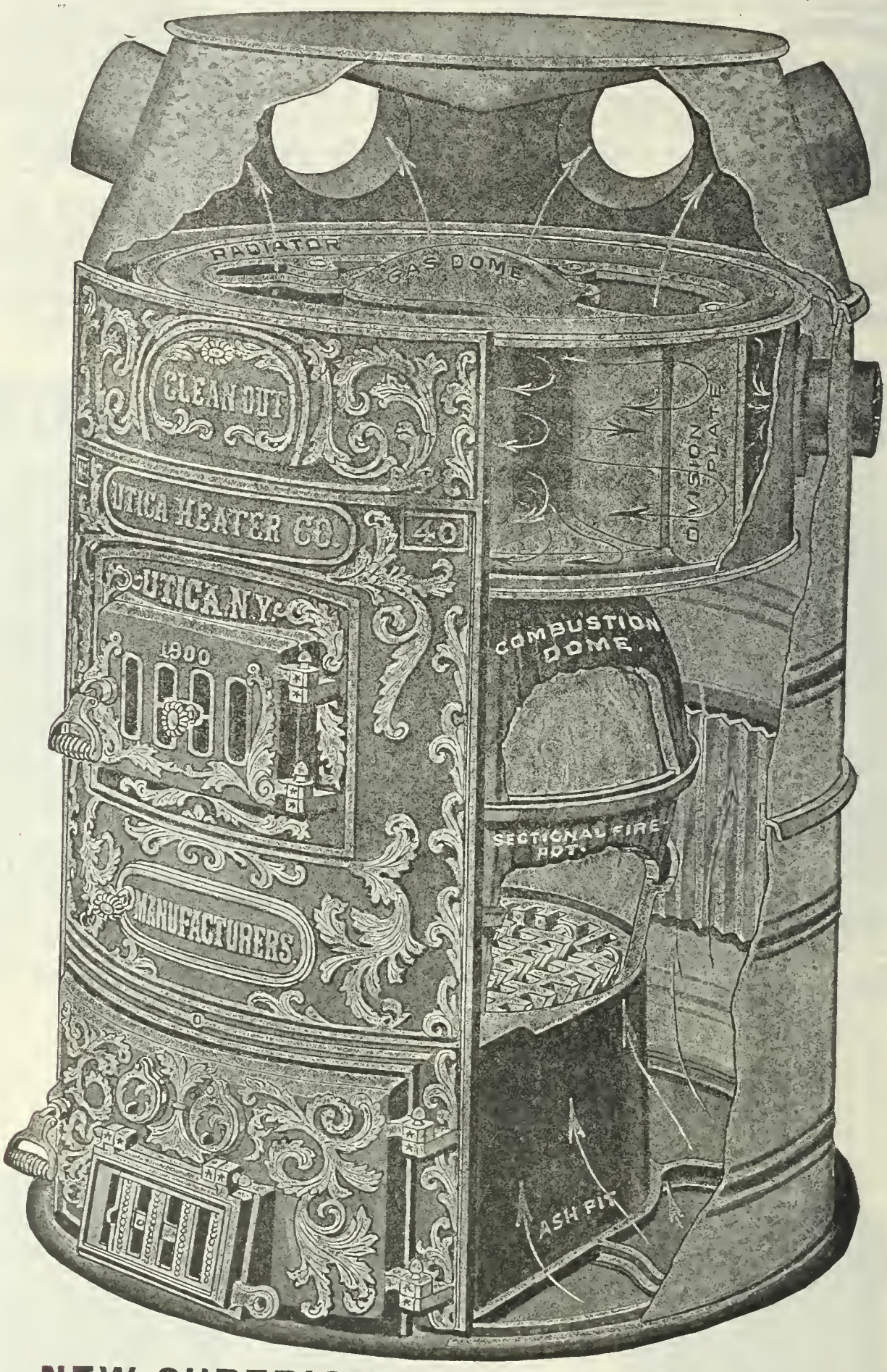
AIR TIGHT HEATERS.

Our line in these comprises everything from the cheapest to the very finest finish possible to produce. Our manufacturing facilities and daily output justify us naming prices below any possible competition. This fact has enabled us to establish Wholesale Agencies in nearly every large city in the United States and makes it possible for us to supply the Dealer "Near His Door," saving time and freight. We also manufacture **Steel Ranges, Steel Cooks, Cast Ranges and Cooks, Hot Blast Coal Heaters, Oaks, Laundry Stoves, Radiators, etc.,** all up-to-date goods.

Write us for particulars and we will put you in the way of making some money.

EXCELSIOR STOVE & MFG. CO., - Quincy, Ills.

BUY THE BEST.



NEW SUPERIOR OR UTICA HEATERS.

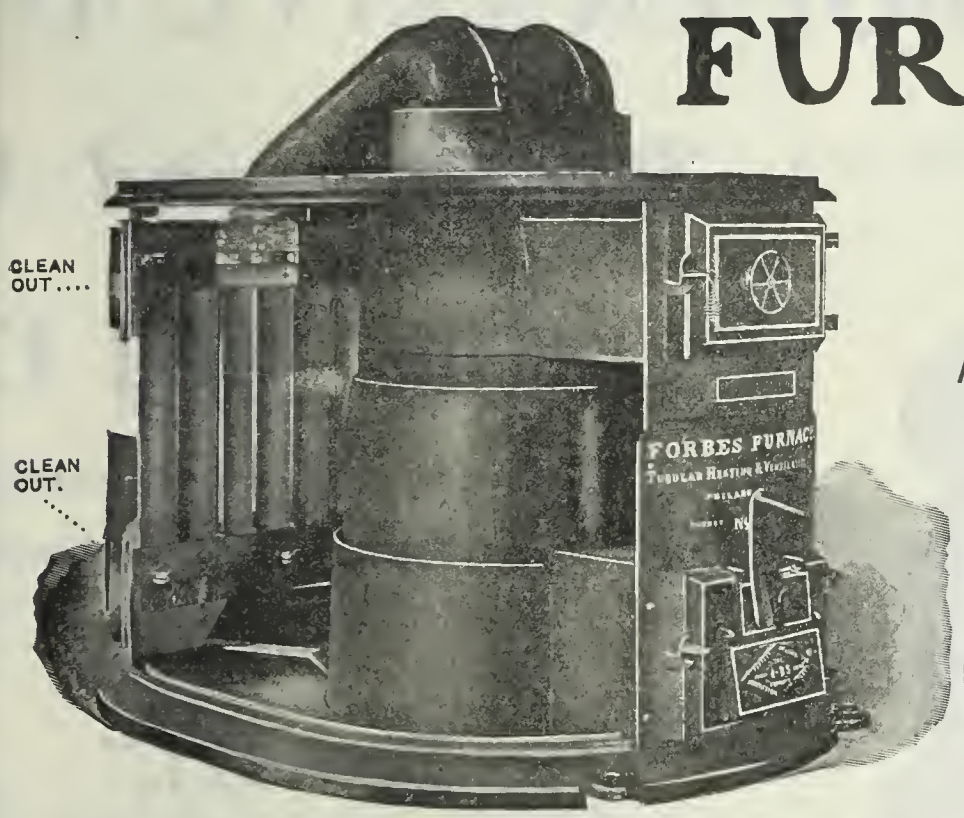
Thoroughly first-class and up to date in every feature. Extra deep ash pit, large fire pot and grate areas. Immense combustion chamber. Powerful radiating surfaces. Ornamental shield front. A most substantial and durable apparatus economical in fuel, mounted low down, and fitted with our ***Improved Gas Ring*** for burning natural gas, or with ***New Hot Blast Attachment*** for soft coal, ***Steel or Cast Radiator.*** Absolutely free from dust, gas or smoke.

Send for new illustrated catalogue, describing our large line of Furnaces and Heaters.

UTICA HEATER CO., UTICA, N. Y.

CHICAGO HEATER & SUPPLY CO., Western Managers, 54 Dearborn St., Chicago, Ill.

FORBES (IMPROVED) WARM AIR FURNACE.



ONLY 4 FEET 3 INCHES HIGH.

Compact and Simple Construction.

Aluminum Tubes

IN RADIATOR
ARE RUST PROOF.

Triplex Grate.

PERFECT SHAKING. PERFECT DUMPING.

Each Bar can be separately replaced.

Forbes Furnaces

Save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE AND PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

232 Quarry St., PHILADELPHIA, PA.

New Leader Furnace

POINTS OF CONSTRUCTION

ASH-PIT has great depth, with flush front. Full sized door.

Grate in full view, making the removal of ashes very easy—*not so with low ash-pit doors.*

Not a square inch of solid substance to obstruct the draft, avoiding clinker formation.

Grate is easily taken apart as there are no bolts used. The cutting off of corroded bolts takes time and costs money.

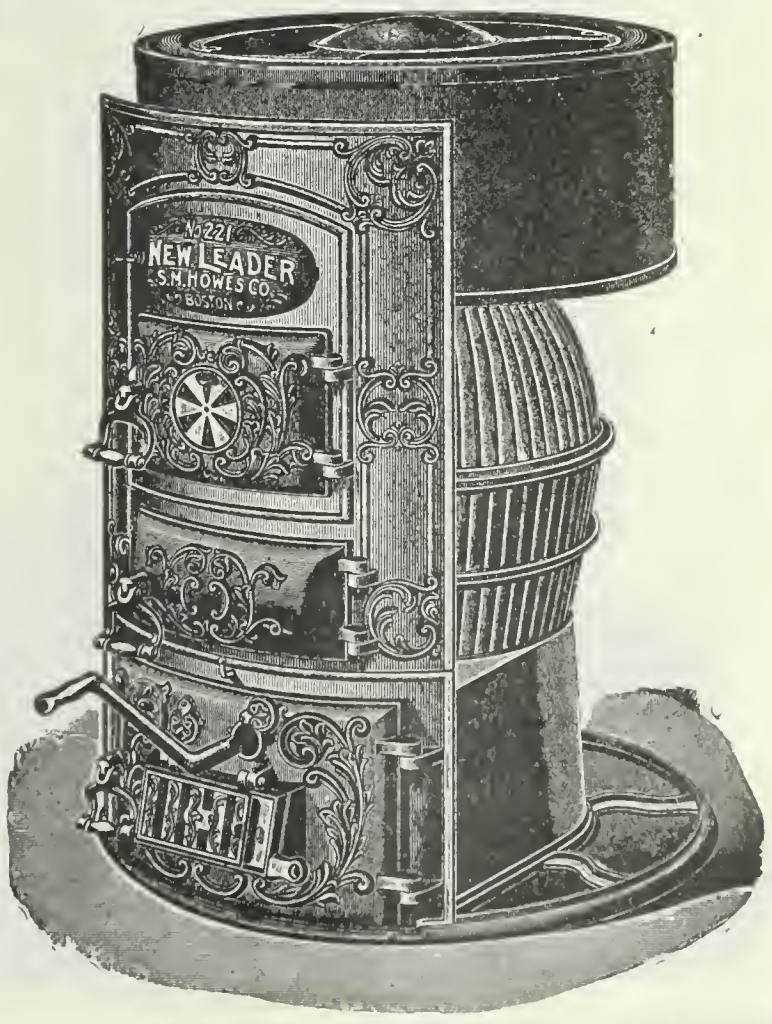
By simply removing the plate in front of the cogs the bars can be replaced by unhooking them from the yokes. This is a new and desirable feature.

Feed Dome is made in one solid casting from fire pit to radiator and offers a large surface for the direct rays of the fire.

Fire Pot is made in two sections, heavy and particularly durable.

Dust Flue is placed in front of the furnace and extends from ash-pit to feed dome. It is large and has a damper.

Radiator is mounted with best quality refined steel.



5 SIZES:

20, 22, 24, 26, 28 in. fire pot.

SEND FOR PRICES.

The S. M. HOWES CO.

40-42-44-46 Union St., Boston, Mass.

From the CO-OPERATIVE F'I

Beauty and U

The "Red Cr

Furnaces is the most
in the market to-day
handles them will tes

"The Royal."

The acknowledged leader of all parlor stoves.

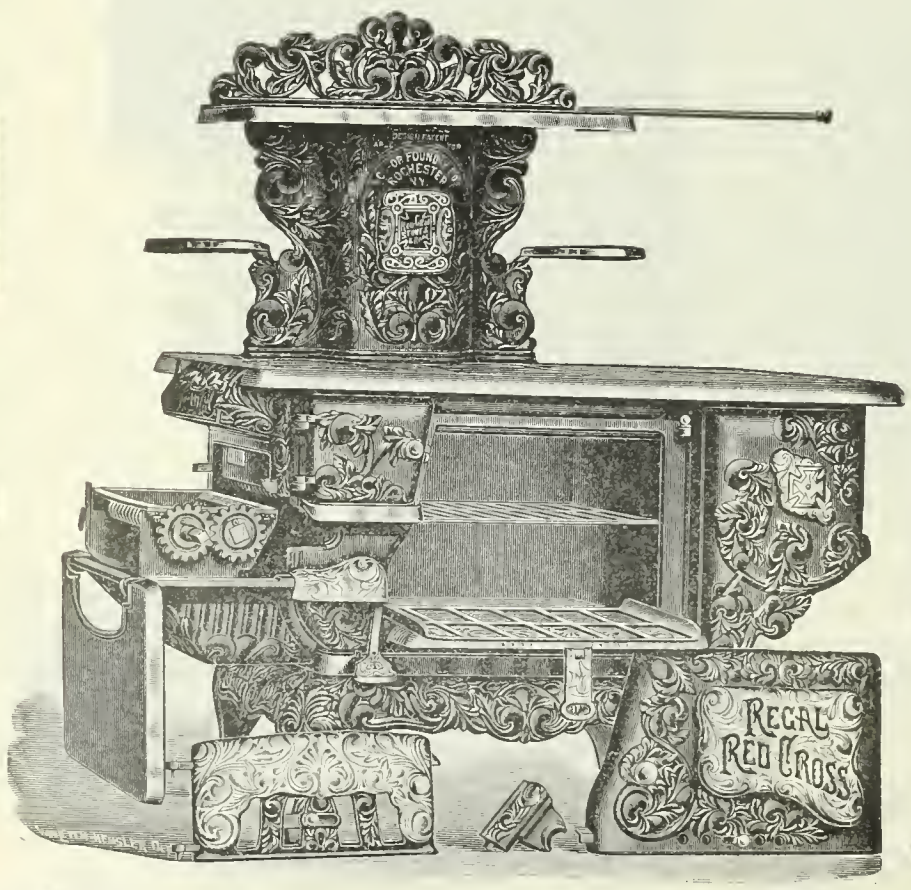
No better parlor stove for the price has ever been produced.

It is durable, beautiful in proportion and ornamentation.

For heating power and economy it has no equal.

Every stove a double heater.

Fitted with our celebrated Eclipse grate.



Regal....
"Red Cross."

Four holes, for hard or soft coal or wood. Duplex or Dockash grate, as desired.

Made with either straight front or top pouch.

Best seller in the market.

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Western Agency, J. P. LINDE

CO.'S CATALOGUE No. 35.

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," line of Stoves,
Ranges and
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every dealer who

This is the Famous

Red Cross" Oak.

A Few Special Features.

Nickeled register wheel in feed door.
Mica illumination in upper feed door.
Gas ring top of fire pot, furnishing air to the face of the fire, insuring perfect combustion of the gases. No catches, every door being secured turnbuckle. Cast iron lining resting on the fire protecting jacket from extrem heat.
And others too numerous to ment on here.

The New Ajax" Furnace.

Note the down draft hot blast gas and ke consumer—entirely new and original, no er furnace on the market has this special ure. Saves fuel, at the same time burns all smoke and gases, consequently gives more t.
With steel or all cast iron radiator.
Send for special furnace catalogue

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Foundry Co.,

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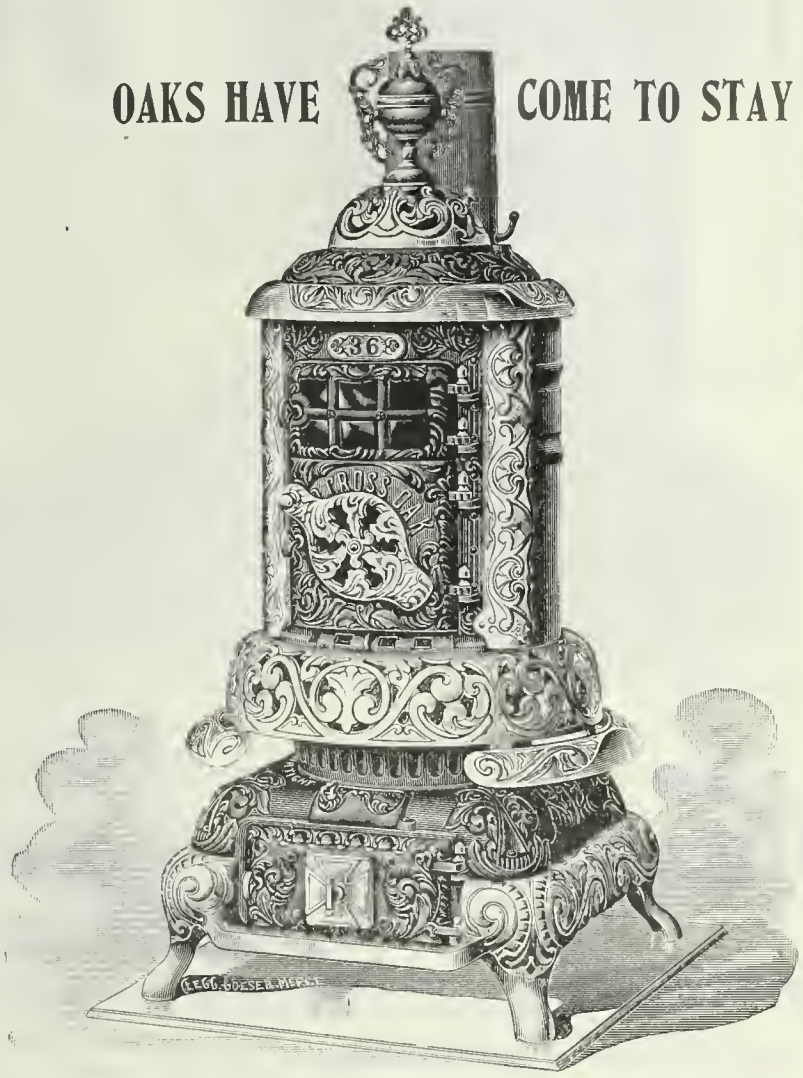
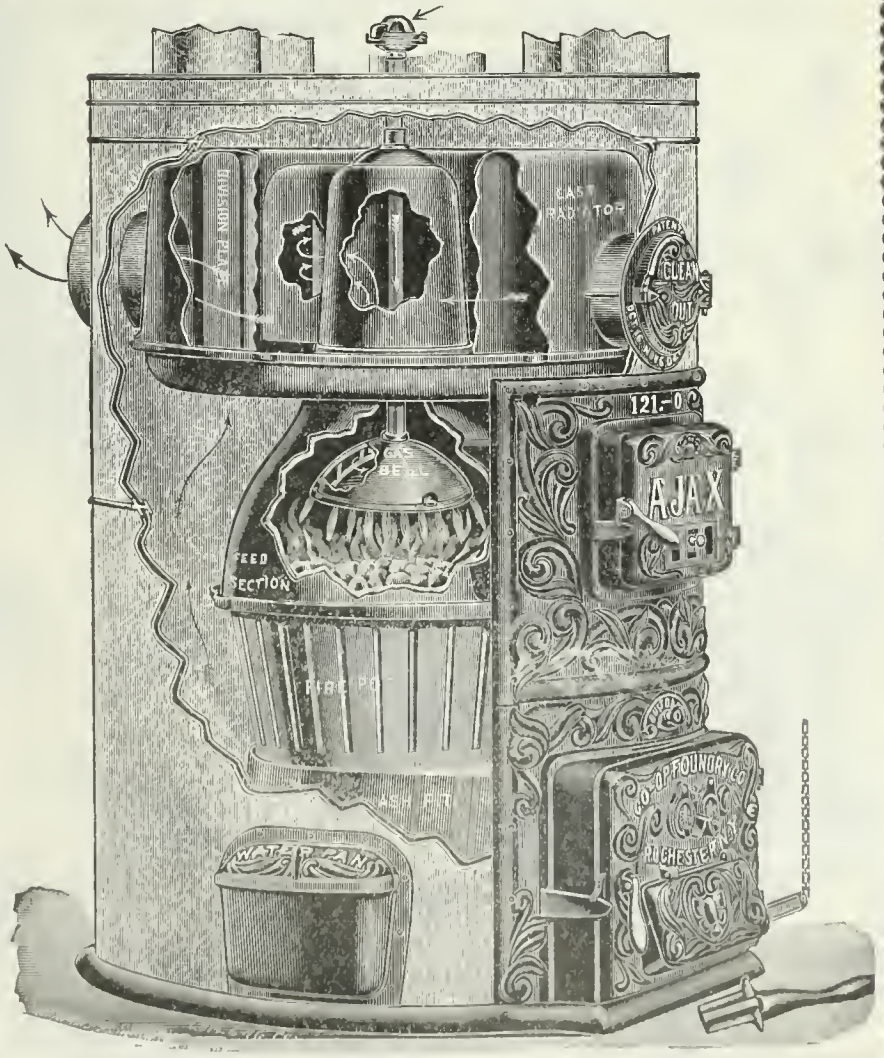
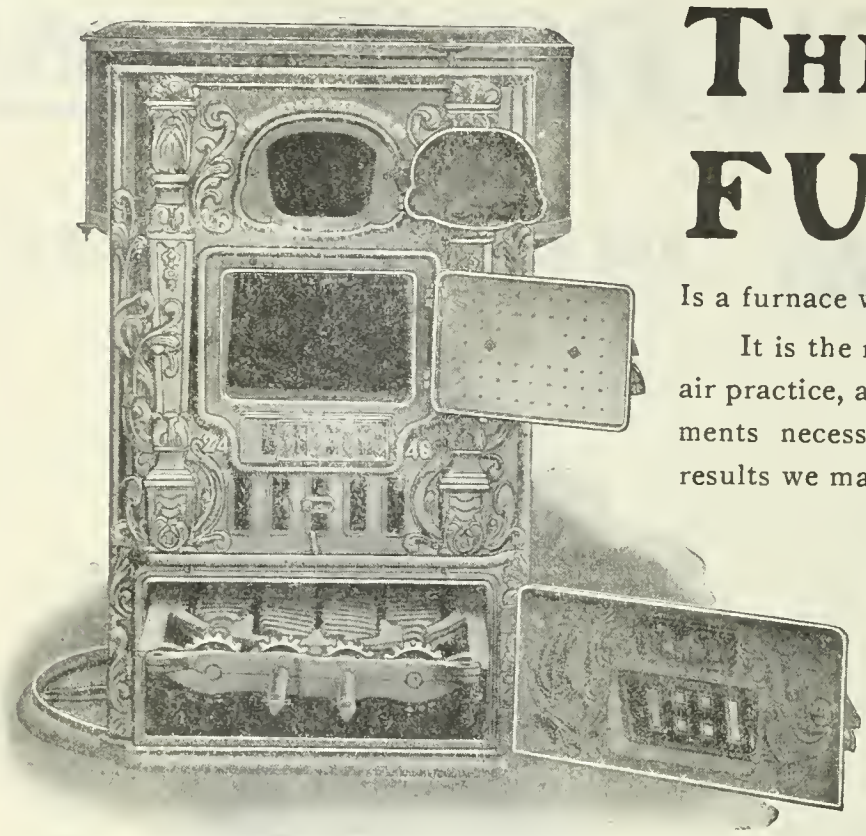
OAKS HAVE COME TO STAY



FULL NICKELED DOUBLE HEATER FOR HARD OR SOFT COAL OR WOOD.



ORNAMENTED CAST FRONT, TRIANGULAR GRATE. FOR HARD OR SOFT COAL.



THE ETNA FURNACE

Is a furnace worth talking about and selling.

It is the result of twenty years' experience in hot air practice, and knowing the wants and the requirements necessary to produce successful, satisfying results we made the Etna accordingly.

The Etna contains many strong, practical features not found in the majority of others. We feel satisfied they will meet the approval of every dealer who has been up against the heating problem and encountered its difficulties. We have smoothed out some of the rough places.

READ THE CATALOGUE. SENT FOR THE ASKING.

Pittsburgh Stove & Range Company

PITTSBURGH, U. S. A.

IDEAL BOILERS 1901

OUR NEW

Boiler Catalogue

NOW READY.

A postal card request will secure a copy...

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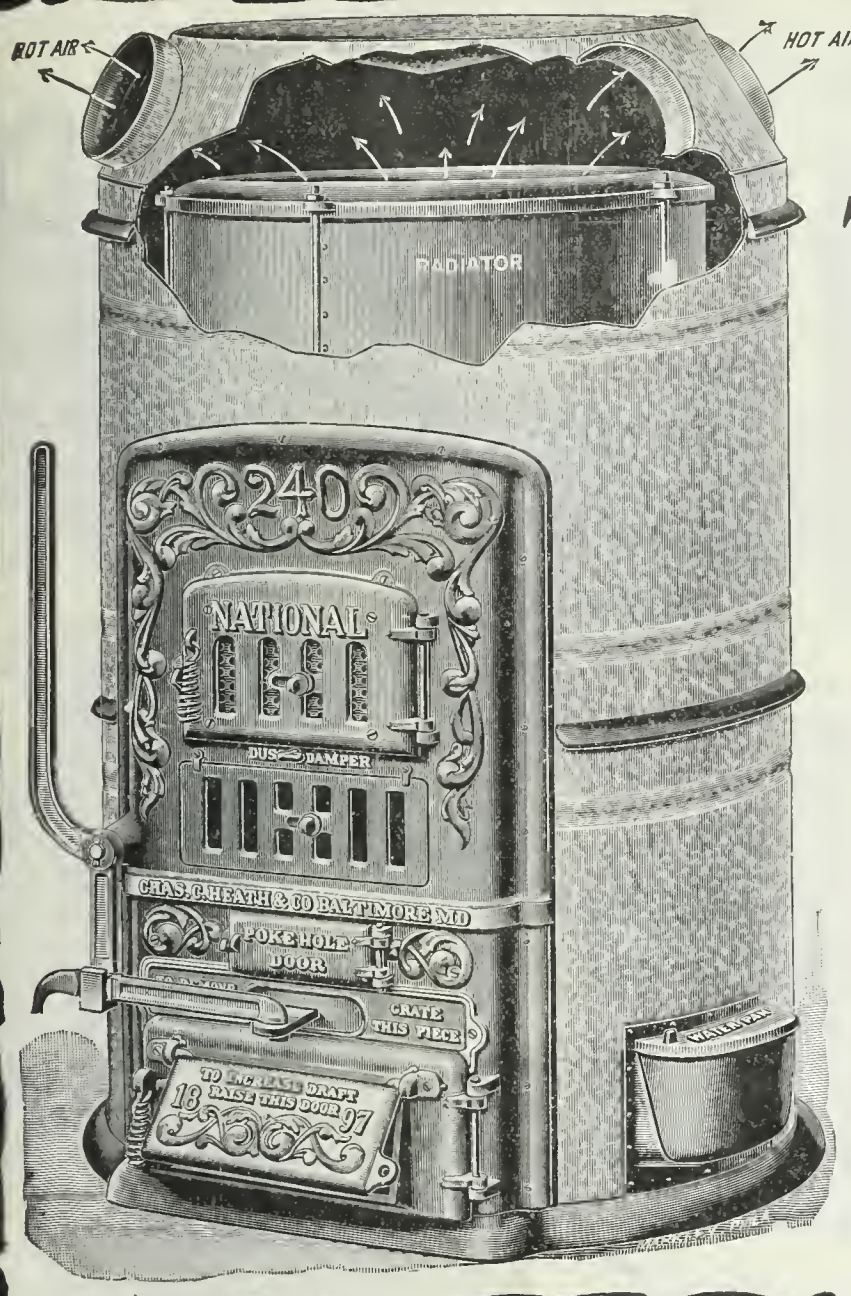
Lake and Dearborn Streets,

CHICAGO.

New York, Philadelphia, Buffalo, St. Louis, Minneapolis and Denver.



A WORD IN SEASON.

The National Furnace

(200 Series)

Has a Great Reputation

IT IS A

WONDERFUL HEATER.

LOW IN PRICE.

DO NOT LET YOUR COMPETITOR GET THE AGENCY.

WRITE *TO-DAY* FOR BOOKLET.

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COOK STOVES.

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WOOD STOVES.

OAK STOVES,

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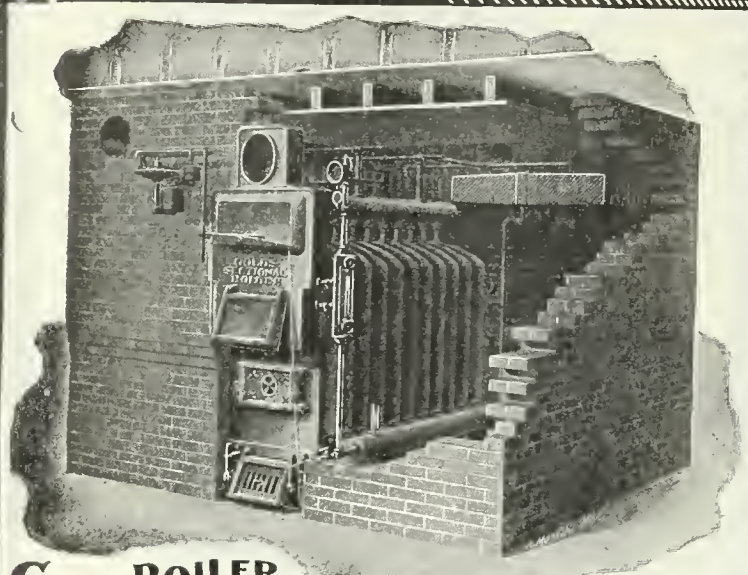

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SQ. FEET STEAM RADIATION SUPPLIED 240 TO 1300.

EUROPEAN AGENT,
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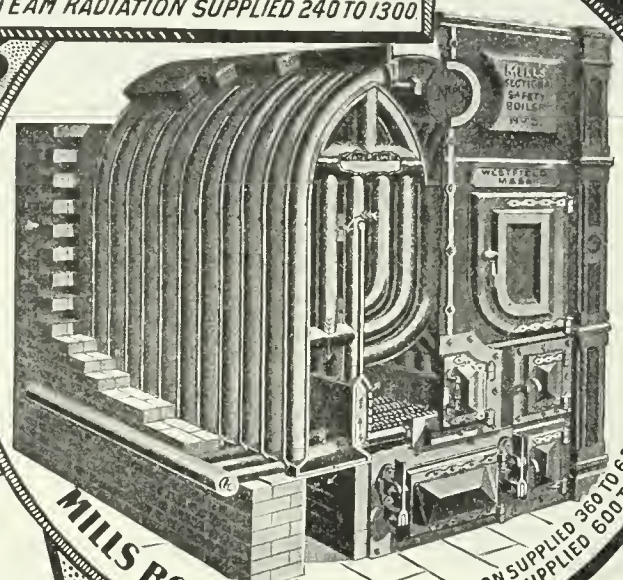

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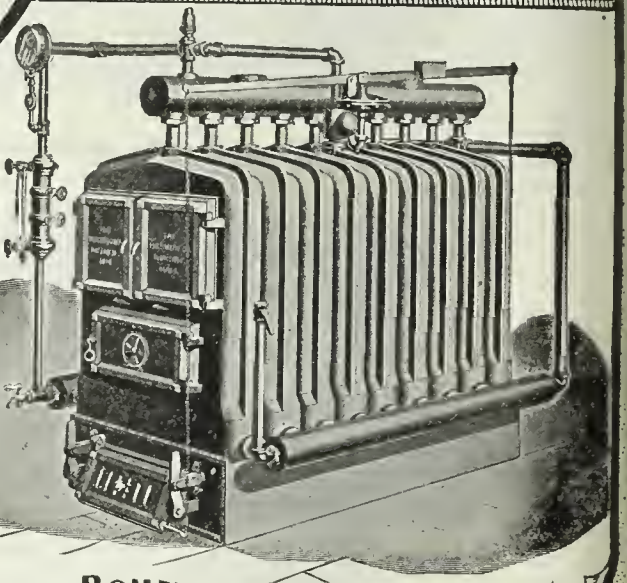

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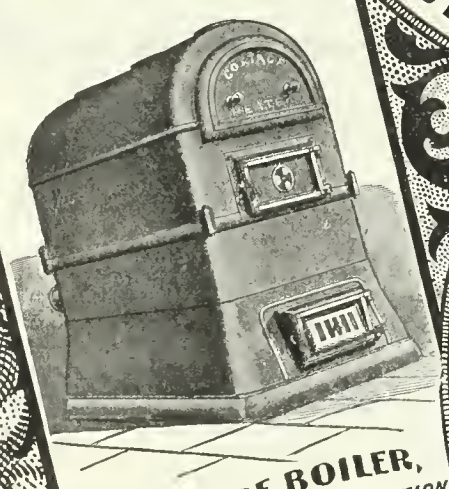

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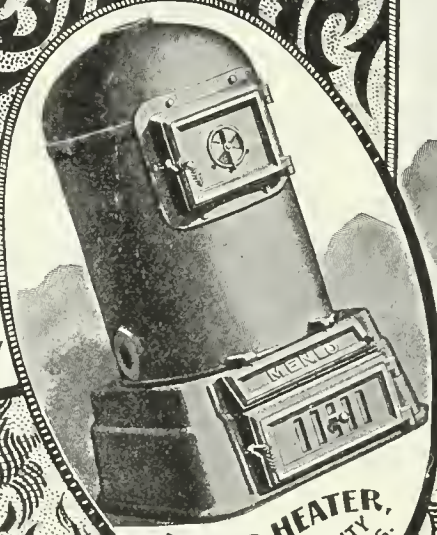

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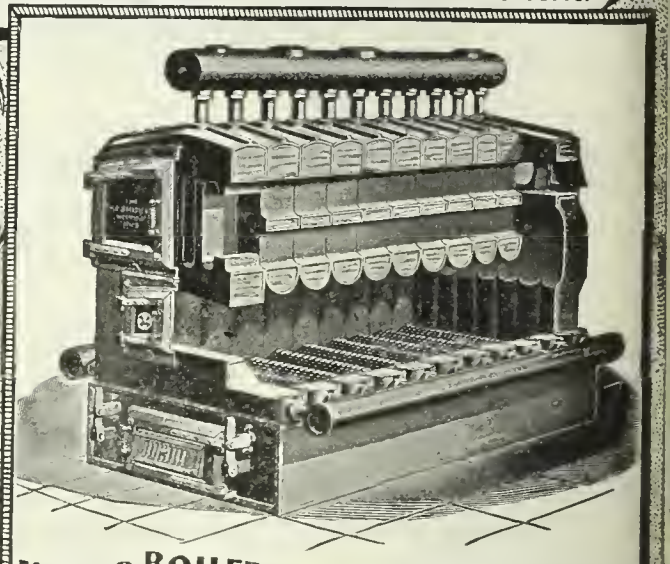
TANK CAPACITY
100 TO 180 GALLONS.



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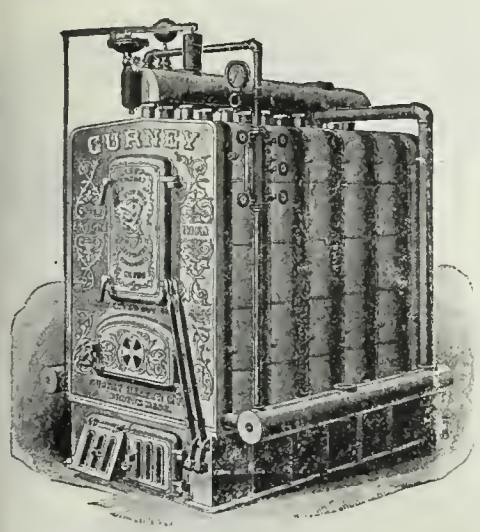


Bright Idea Steam Boiler.

Nothing Equal to It.

It was Goethe, you recollect, who declared that "to find some one who thinks as I do strengthens my belief." Well, here's what one individual who has thoroughly tested the

GURNEY

"Bright Idea" Heater

thinks of it: "My house is large and exposed, but I can heat the whole of it with the mercury at zero outside. I believe there is nothing equal to the 'Gurney' for heating a house."

If such testimony were rare, of course it would carry less weight, but when we assure you that we have on file hundreds of letters of the same tenor, it seems almost impossible for you not to comprehend the excellence of the "Gurney" Heaters.

But, having comprehended it, why not make use of it? Become our agent and then you'll share its benefits. For just so long as merit finds appreciation, just so long are "Gurney" Heaters bound to sell in increasing numbers.

GURNEY HEATER MFG. CO., 74 Franklin St., BOSTON, MASS.
111 Fifth Ave., NEW YORK CITY.

Western Selling Agents, JAMES B. CLOW & SONS, 222-224 Lake St., Chicago, Ills.

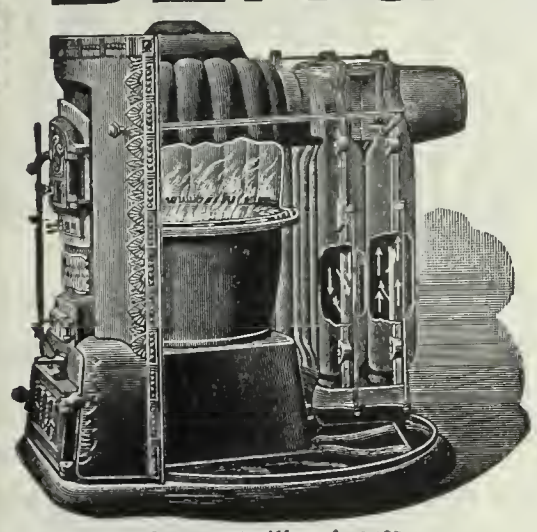
BENGAL FURNACES

ARE TRADE WINNERS.

EASY TO SELL.

SURE TO PLEASE.

ALL CAST IRON.



Bengals meet all the requirements of convenience and economy—are simple in construction and manipulation, and

HEAT THE HOUSE—NOT THE CHIMNEY.

Secure a BENGAL AGENCY at once.

WRITE FOR CATALOGUE AND FULL PARTICULARS.

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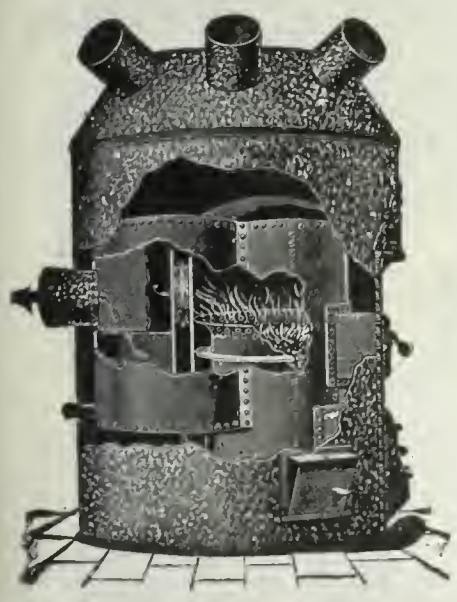

WEIR ALL STEEL GAS AND SOOT CONSUMING FURNACE.

THE HEAVIEST STEEL FURNACE MADE.

Absolutely gas and dust tight. A great heat producer but a fuel saver.

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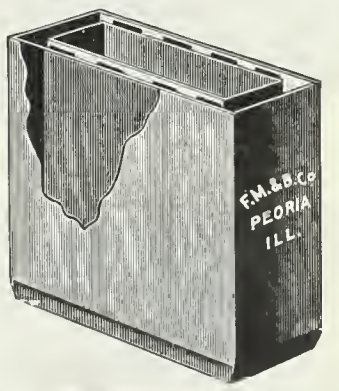
THE MEYER FURNACE CO.,

1300-1304 S. Washington St.,

SEND FOR CATALOGUE. **PEORIA, ILLS.**



"The Handy Furnace Pipe."

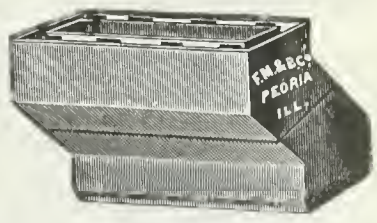
MADE WITH A VIEW OF BEING SAFE.

The saving of labor in putting it up really makes it the cheapest hot air pipe on the market.

MANUFACTURED BY

F. MEYER & BRO. CO.,

SEND FOR CATALOGUE. **PEORIA, ILLS.**



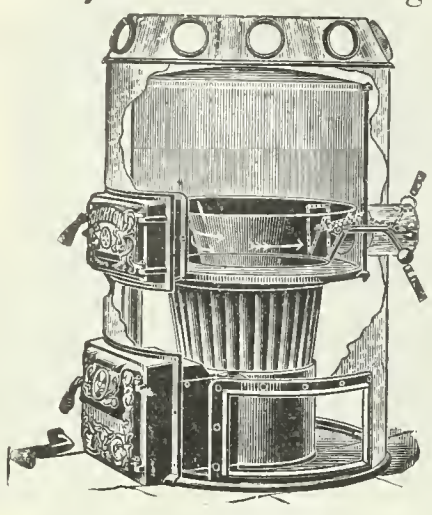
BRAND STOVE CO.

STOVES, RANGES and FURNACES.

SEND FOR CATALOG.

MILWAUKEE, WIS.

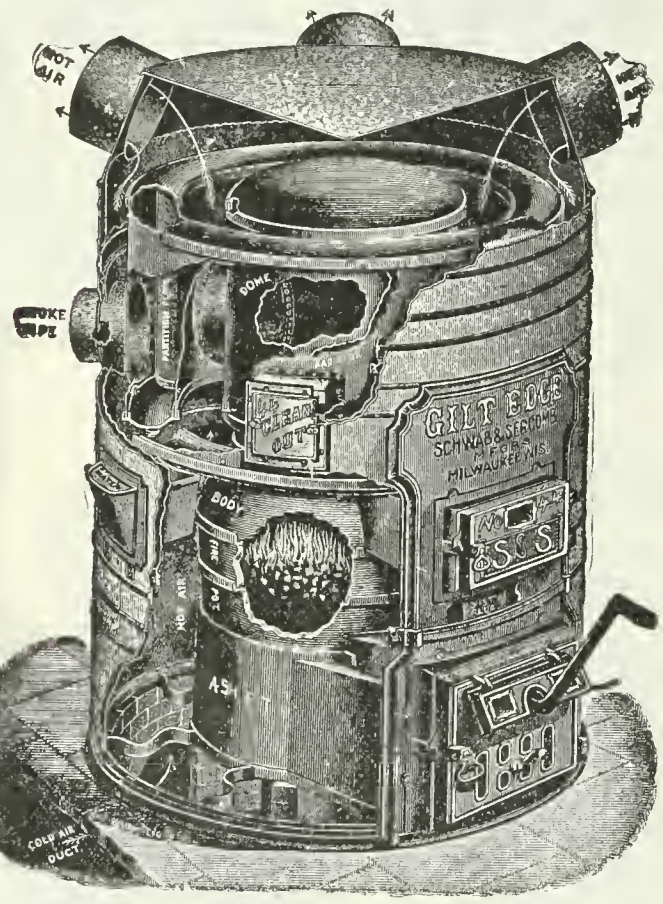
IF SOME Furnace Manufacturers spend fifteen or twenty thousand dollars a year for advertising a name, and as much more for the expense of conducting a big city store, how much do they have to add to the net manufacturing cost of each Furnace if they sell 3500 Furnaces a year?



If a "DIGHTON" Furnace will heat a given number of cubic feet with less fuel, distribute the heat to the different rooms as evenly, last as long without repairs, and the cost to you is from one-third to one-half less than others, how long should it take any man of average ability to get his fair proportion of Furnace business in his locality?

Did you ever hear anybody who has used a "DIGHTON" say they were dissatisfied with it?

DIGHTON FURNACE CO., Taunton, Mass.



Gilt Edge Warm Air

AND

Combination Heaters

are leaders embodying points of furnace excellence possessed by no other furnaces. A large variety of sizes and styles, each especially adapted for a certain class of fuel. We are manufacturers of a complete line of warm air registers, safety pipe and tin galvanized iron furnace fittings.

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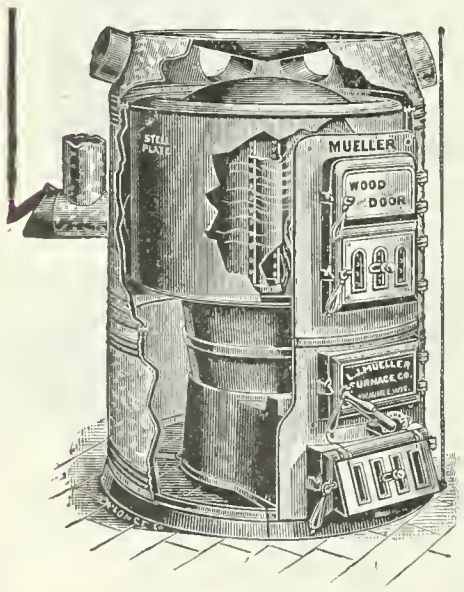
MILWAUKEE, WIS.



44 YEARS' EXPERIENCE

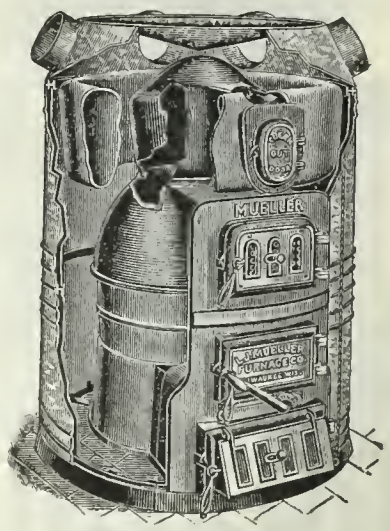
Is Embodied in

MUELLER FURNACES.

Any Wonder they are the Most Satisfactory?

MADE IN ALL SIZES FOR ALL KINDS OF FUEL.

Write for 1901 Catalogue and Prices.
Get our Special Register Offer.



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Royal Heaters.

MANUFACTURED BY THE

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ALL THE LEADING LINES OF

STEAM, HOT WATER & HOT AIR,

FOR HEATING ALL CLASSES OF BUILDING.

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Emperor Furnaces

FOR WOOD.

Simple, Safe, Durable. Economical in Fuel.

The Best and Cheapest Line of Wood Furnaces. . . .
Furnished for either Brick or Galvanized Iron Casing.

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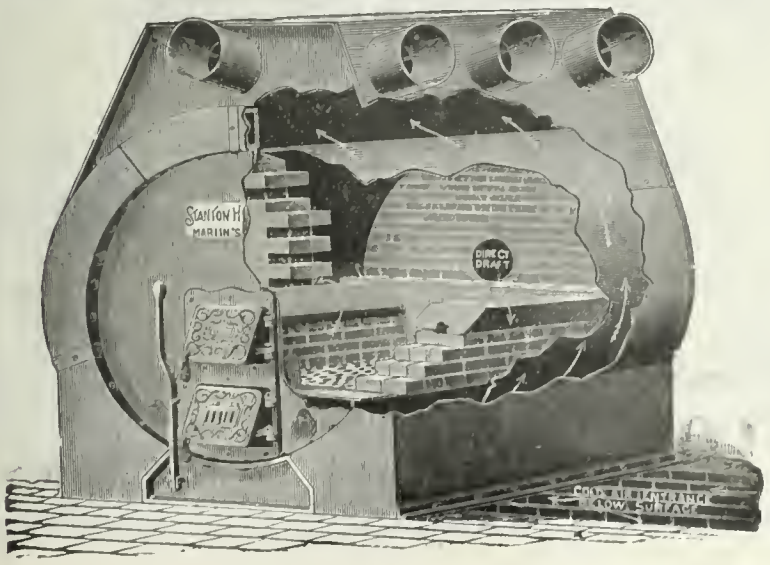
The Stanton Seamless Heater,

PORTABLE CASED.



LOUISVILLE, KY., Apl. 5th, 1901.

THE STANTON HEATER CO.,
Martin's Ferry, Ohio.

Gentlemen:—Your favor of the 3d inst is received asking our experience with the Stanton Heater which you put in for us during the fall of 1899. In reply we will say that it gives us pleasure to express our entire satisfaction with this Furnace. While we have had no severe weather this winter there have been several quite cold snaps, but our offices have been very comfortably heated, and our coal bill (Pittsburgh coal) has been quite moderate compared with other Heaters we have used.

The satisfaction the Heater has given us can be best expressed by saying that we have not heard the Furnace mentioned once this winter. You can see, therefore, that we have had absolutely no cause for complaint.

Yours very truly
ROBINSON-HUGHES & CO.

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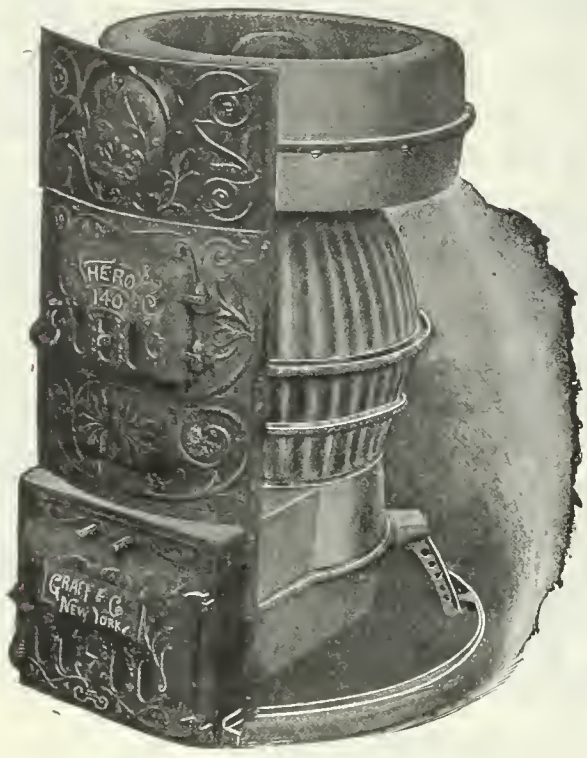
THE STANTON HEATER CO.,

Martin's Ferry, Ohio.

See our advertisement next week.

Our Fall Styles Are Now Ready.



FAULTLESS FURNACES.

Extra Heavy Style—Highest Grade Made.

HERO FURNACES.

ALL-CAST or with STEEL RADIATOR.
Heavy, Durable, Powerful Styles.

COMFORT FURNACES.

Popular Style—Popular Prices.

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Unique Style—Moderate Prices.

FULL PARTICULARS ON APPLICATION.

The Graff Furnace Co.,

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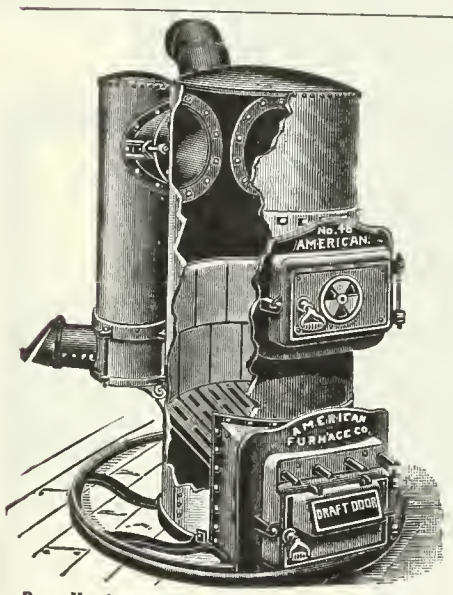


Burn Hard or Soft Coal, or Coke. Large Doors.

About Fire Pots.

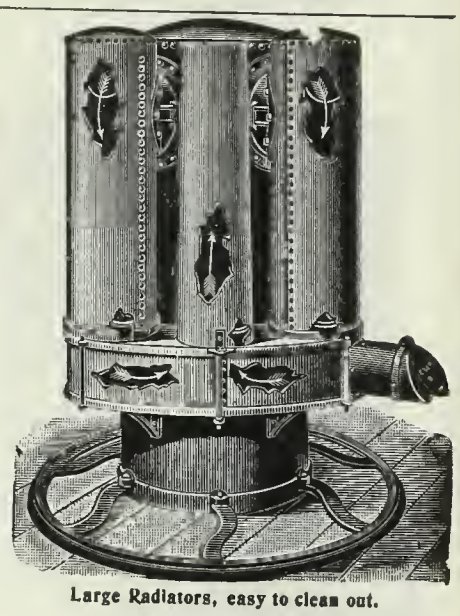
We formerly lined our fire pots with cast iron—then they cracked and warped. Now we use fire brick for lining and will guarantee it for five years. The lining is replaced through the fire door.

The **AMERICAN FURNACE** is made strong in places where other furnaces have proven weak; it is made of heavy steel and riveted tight like a boiler. Will burn any kind of fuel.

You can only build up a permanent furnace business by handling a first-class furnace. We manufacture for the better class of trade.

The American Furnace Co.,

1911-13 PINE STREET, · ST. LOUIS, MO.



Large Radiators, easy to clean out.

Write for prices and secure the agency before the other fellow gets it.

KEEP UP WITH THE PROCESSION.

CONTRACTORS USING OUR BOILERS

Make Money and Friends

WE'LL GLADLY TELL YOU HOW.

If this interests you drop us a line and receive our NEW Catalogues and Prices.

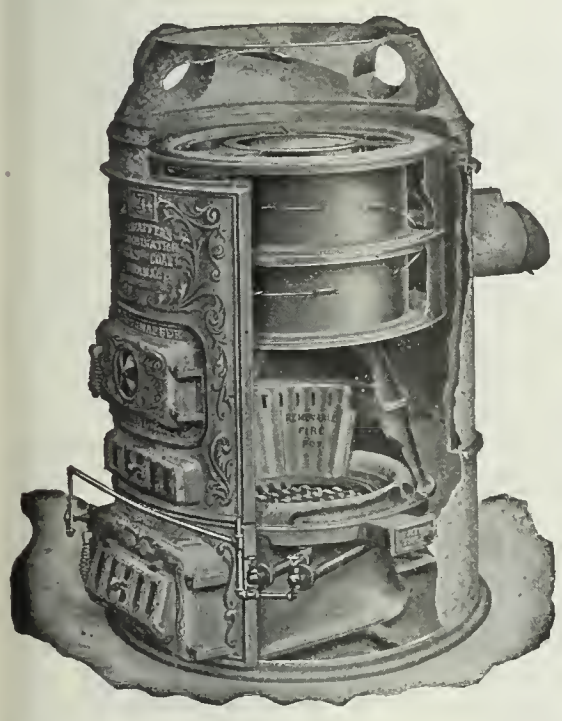
KEWANEE BOILER COMPANY

Home Office and Factory,

Chicago Store, 169 Lake St.

KEWANEE, ILLINOIS.

Schaffer's Combination Gas and Coal Furnace.



The Most Economical and Durable Gas Furnace On the Market.

It will heat a house as cheaply with Gas as with Hard Coal, and is so arranged that the change from one fuel to the other can be made in a few minutes, without removing the burner or grate, or disconnecting the gas piping.

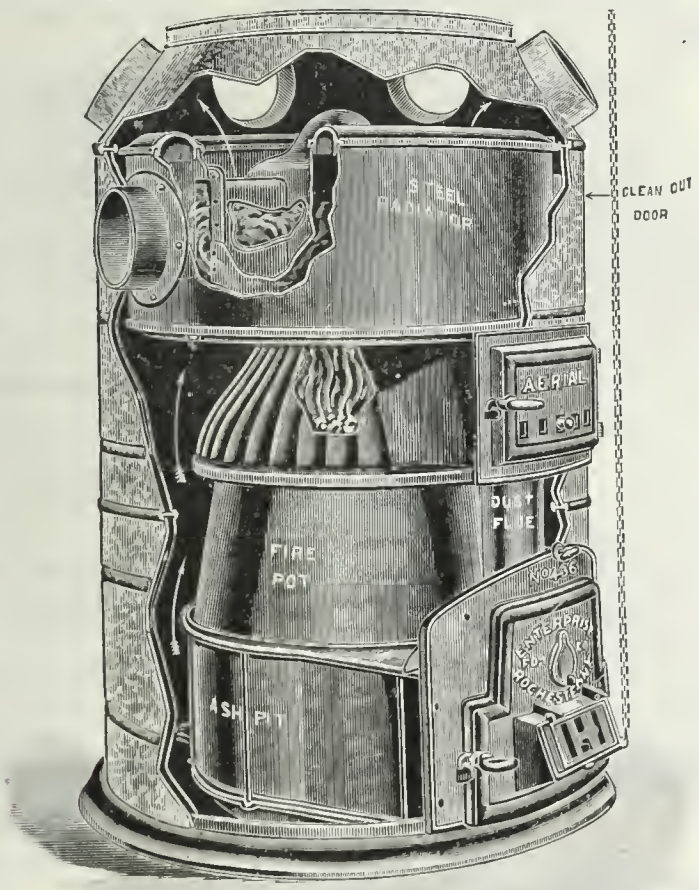
Absolutely No Condensation.

For Catalogue and Price List. write to

JOHN P. SCHAFFER,
18 WOOD ST.,
PITTSBURG, PA.

Aerial Furnaces

STRICTLY UP-TO-DATE IN EVERY RESPECT.



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FOR SMART WORK

Use only "The Dean" Boilers

MADE BY

DEAN BOILER CO., 73b Pearl St. BOSTON MASS.

Furnace Heating.

A Practical and Comprehensive Treatise on Warming Buildings with Hot Air, by William G. Snow, with an Appendix on Furnace Fittings. 170 pages; size, 6 x 9 inches. Cloth bound. Price, **$1.50.**

This is the only book that has been brought out which presents a systematic and reliable treatment of the warm air furnace system of heating.

It deals with the various types of furnaces, their construction, proper location and setting, together with furnace fittings, and all matters pertaining to the installation of furnaces and to effective and economical heating by warm air. The subject is discussed for the first time by a competent author possessed of a scientific education and a practical training, who presents positive rules, based on a long experience, for guidance in designing furnace systems for dwellings and other buildings where this popular method is employed. The various details of furnace work are described simply and at such length that the volume will be valuable to all who are in any way interested in the subject. It is recommended to practical furnacemen, to architects, builders and house owners, and to tinners and plumbers in suburban sections who do furnace work. To all these it will prove a reliable text-book and guide.

PARTIAL SUMMARY OF CONTENTS BY CHAPTERS.

Chapter I.—Furnaces—Is devoted to Furnace Construction—The Relative Proportion of Furnace Parts—Secondary Heating Surface—Economy and Efficiency—Heating Capacity and Exposed Wall Surface—Manufacturers' Ratings of Their Own Productions, etc.

Chapter II.—House Heating—Compares Furnaces and other apparatus, and describes Method of Setting Brick and Portable Furnaces—Location and Area of Cold Air Supply—Cold Air Rooms and Air Filters—Return Ducts and Air Circulation—Size of Hot Air Pipes—Location of Registers, etc.

Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

Chapter IV.—Air—Deals with the Necessity of Ventilation—Water Needed to Moisten Air—Expansion of Air—Velocity of Air in Tubes, etc.

Chapter V.—Heating and Ventilation of Buildings—Considers the Size of Furnaces Required—Fresh Air Room and Supply—Air Circulation—Size of Flues—Use of Stack Heaters—Size of Heating Coils in Vent Flues, etc.

Chapter VI.—Heating of Public Buildings, Churches and Stores—Is given to the Size of Furnaces Required—Grate Surface in Ventilated Buildings—Air Supply—Size of Heating and Ventilating Flues—Size of Stack Heater, etc.

Chapter VII.—Fan-Furnace Combination System—Is devoted to Positive Warm Currents from Fan Systems—Location of Fan and Driving Apparatus—How Good Furnaces are Aided by Fans—Types and Efficiency of Fans—Area of Ducts and Flues, etc.

Chapter VIII.—Temperature Control.

Chapter IX.—Estimate and Contract Blanks.

Chapter X.—Value of Fuels. The Proper Size for Furnace Chimneys—with tables.

APPENDIX.

Furnace Fittings.—A section of 45 pages dealing with the Making of Furnace Casings—Metal Cold Air Boxes—Making Furnace Bonnets and Collars—Making Pipe and Elbows—Register Boxes and Stack Shoes, etc.

Sent postpaid on receipt of price, **$1.50.**

DAVID WILLIAMS COMPANY,
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232-238 William Street, New York.

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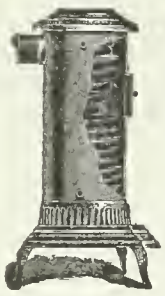

HEATING BY COMBINATION STOVES AND FURNACES.

Suitable for Large or Small Houses, Stores, Conservatories, Barber Shops, Hotels, etc., etc.

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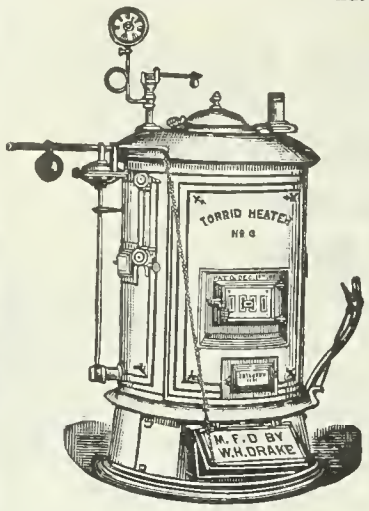

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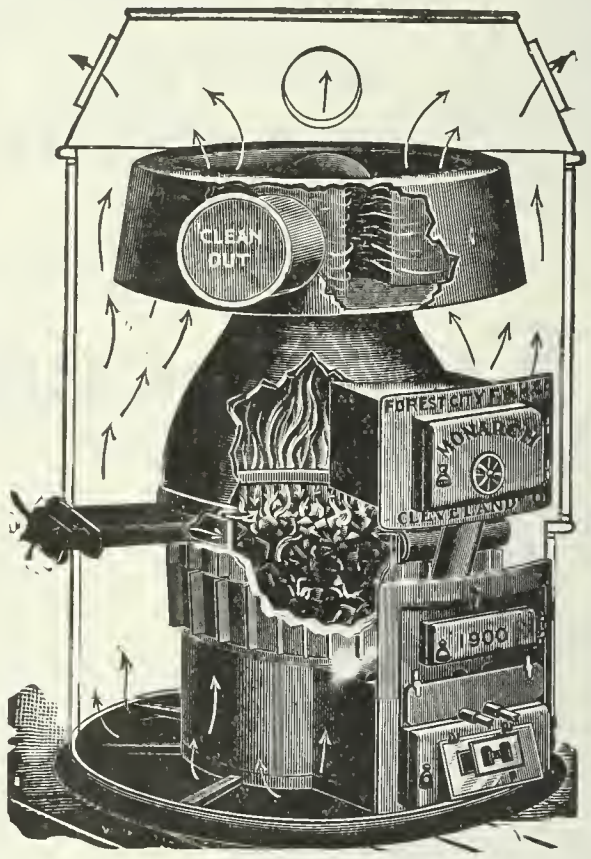

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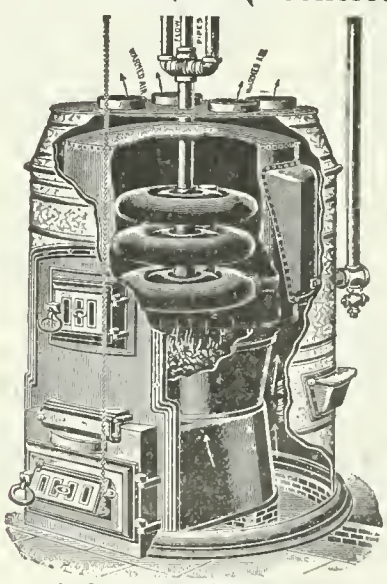

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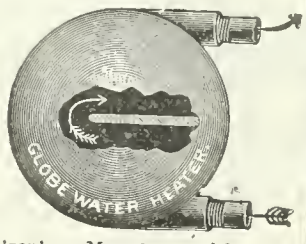

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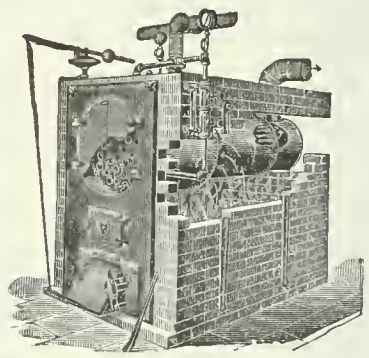

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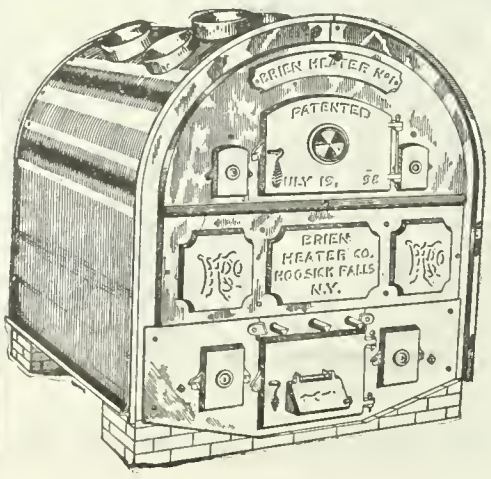

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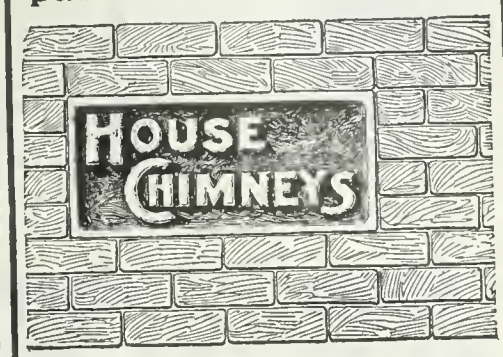

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SMOKE PIPE FOR WOOD FURNACES - - - - 48

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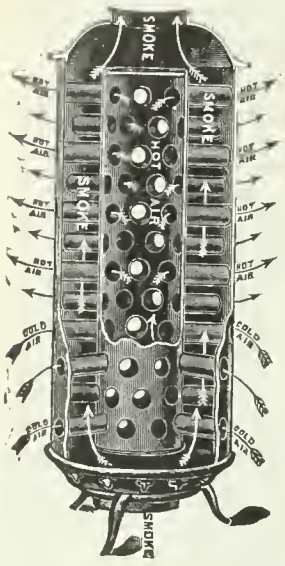

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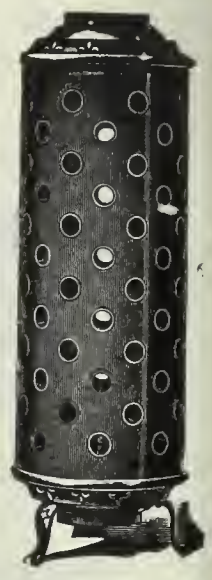

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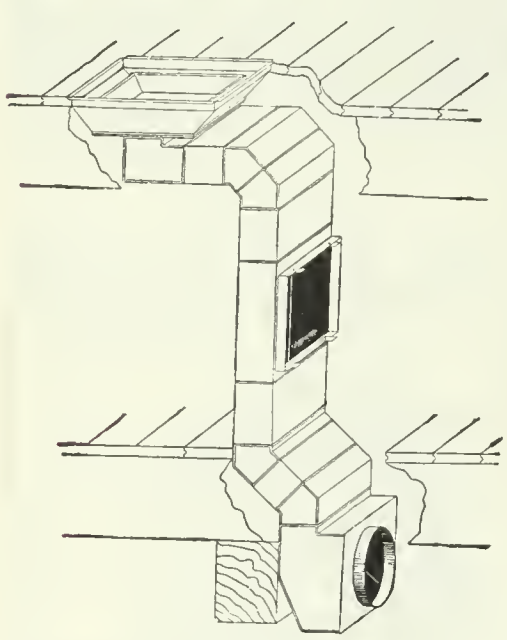

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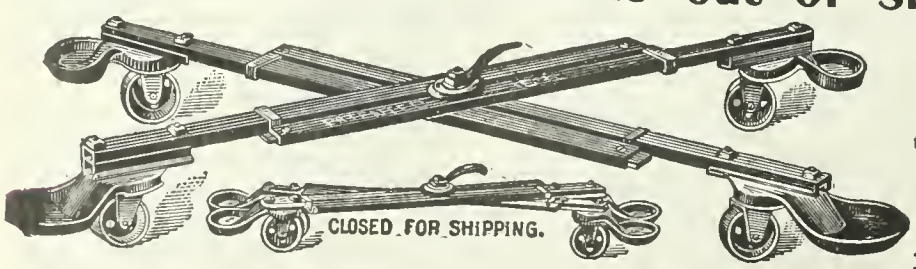

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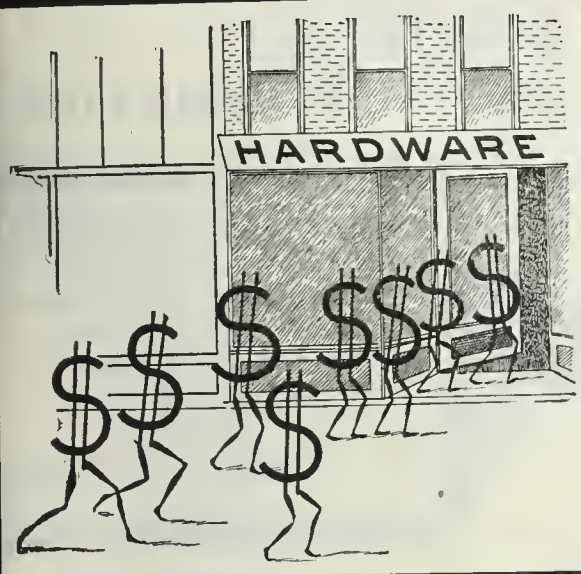

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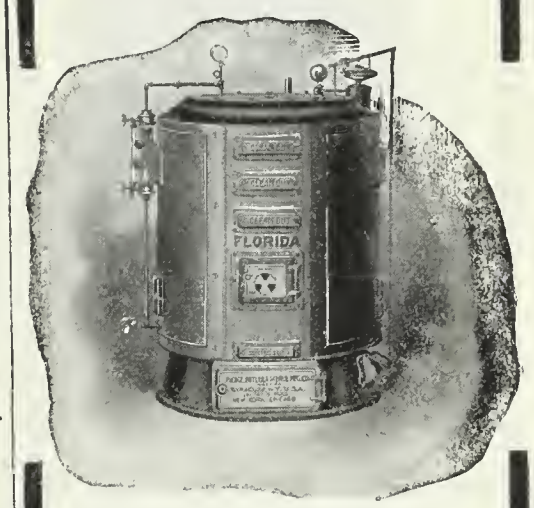

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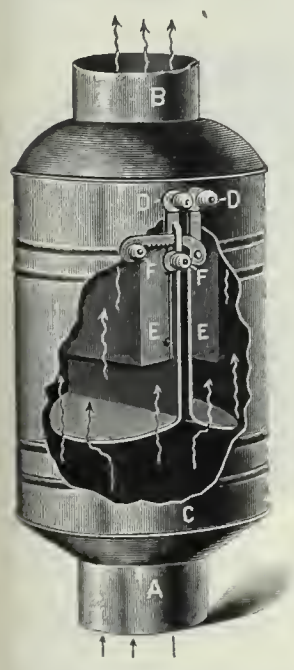

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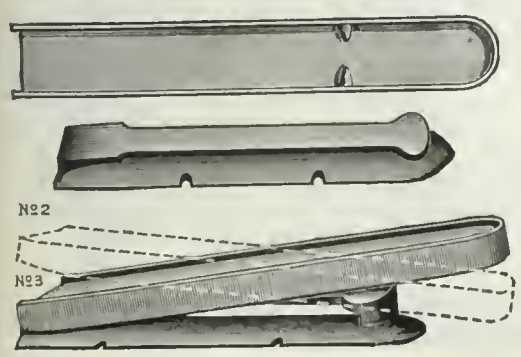

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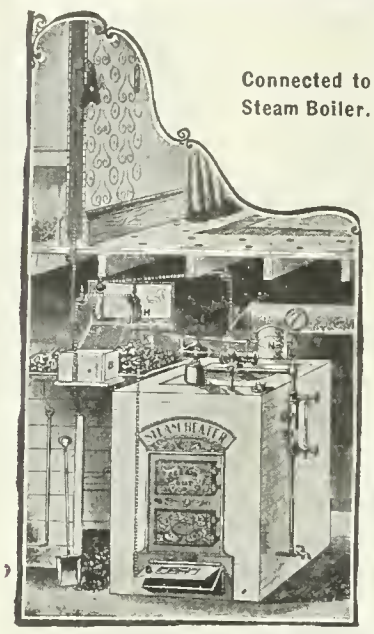

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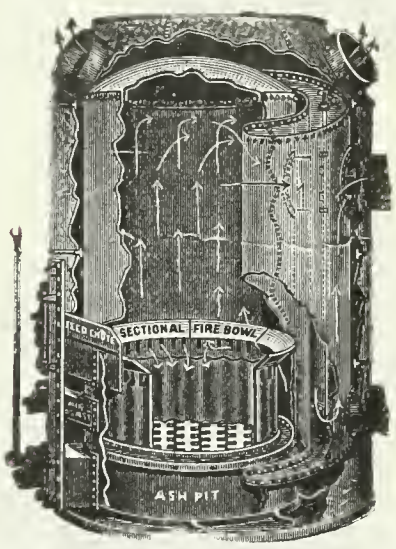

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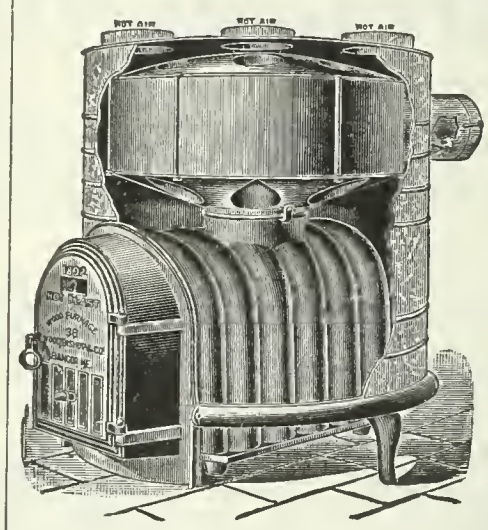

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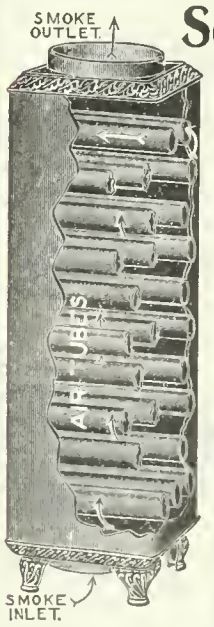

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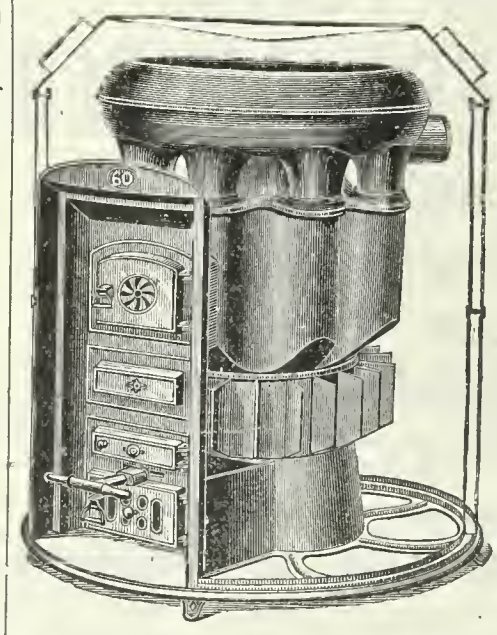

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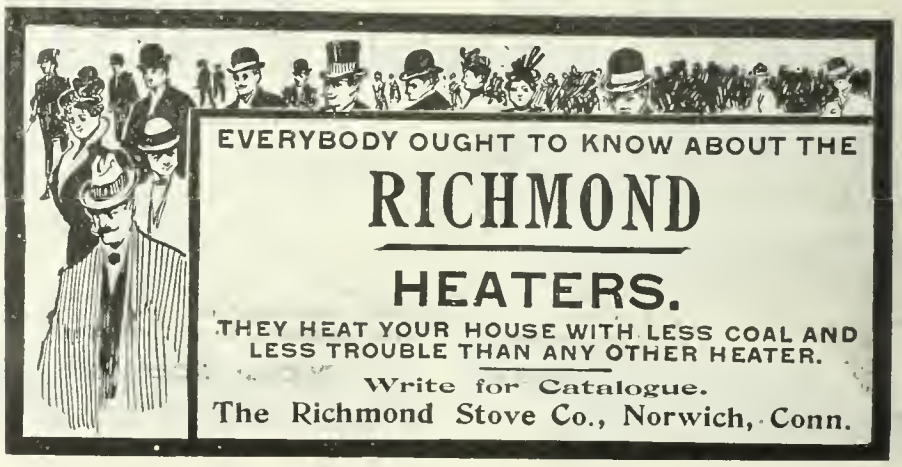
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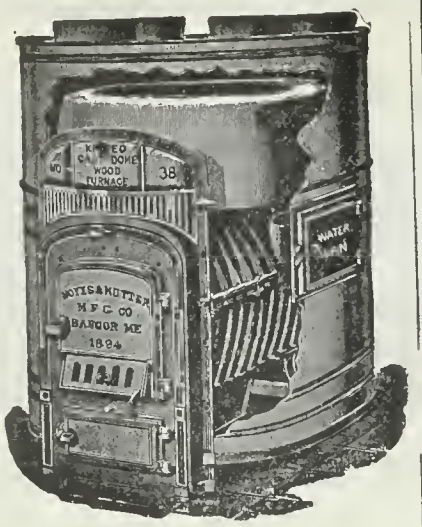

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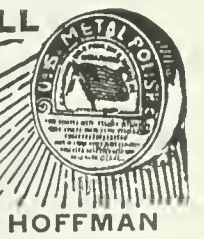

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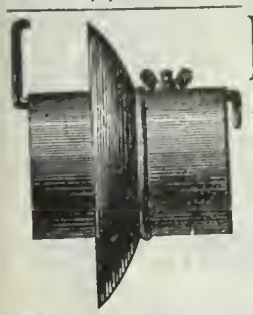

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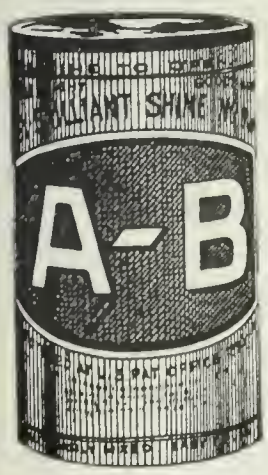

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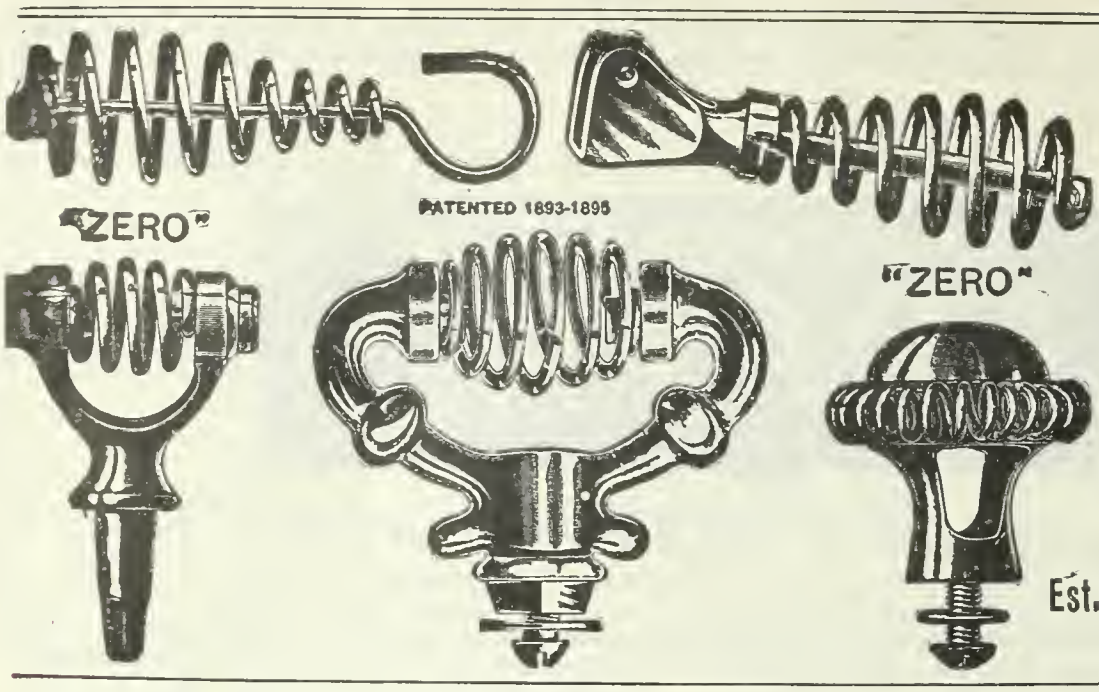

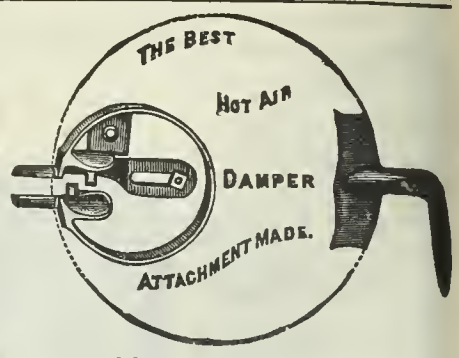

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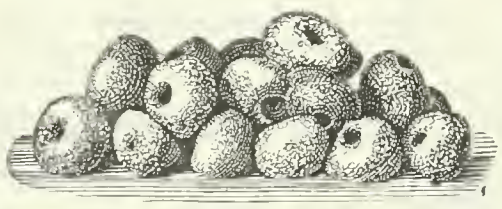

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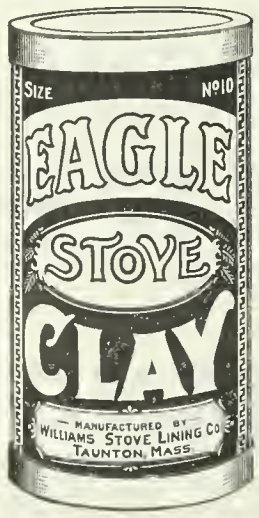

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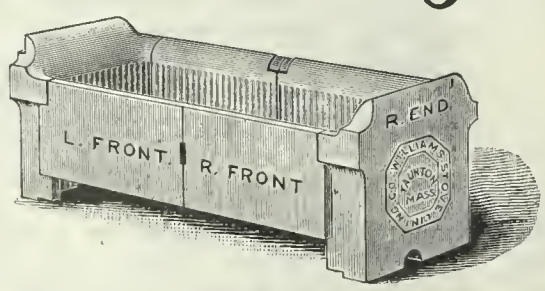

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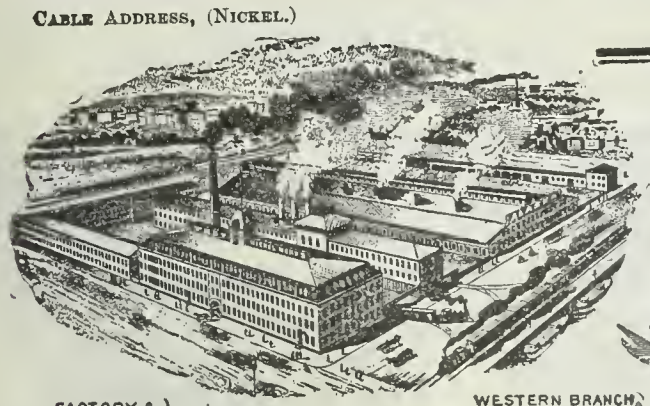

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Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

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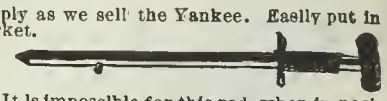

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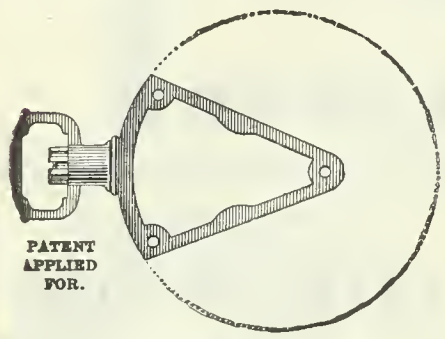

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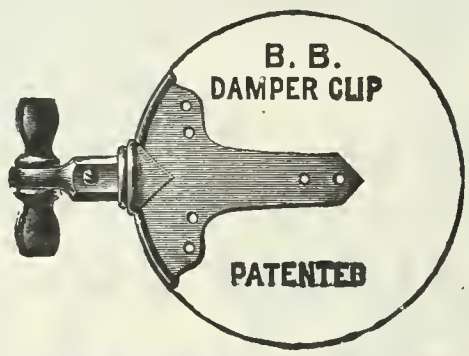

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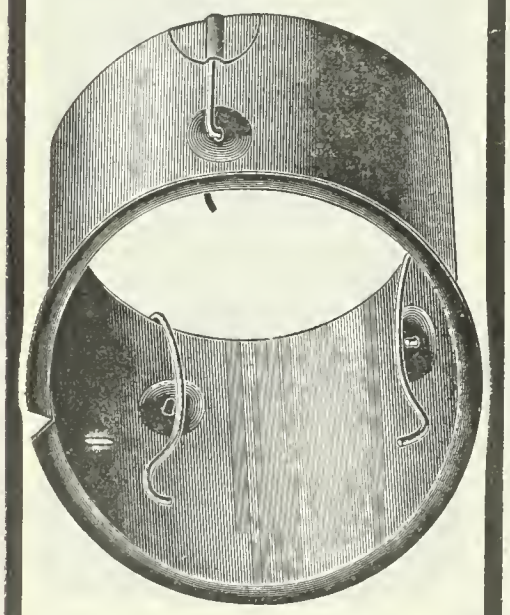

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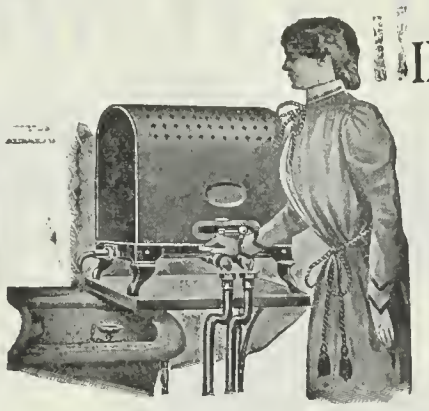

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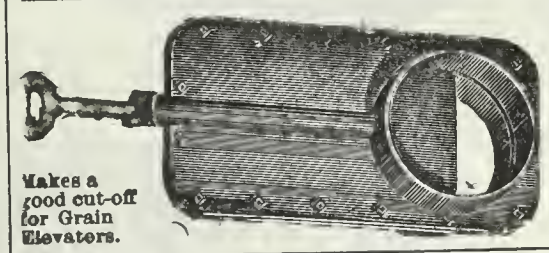

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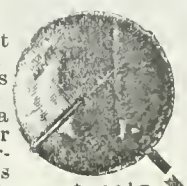

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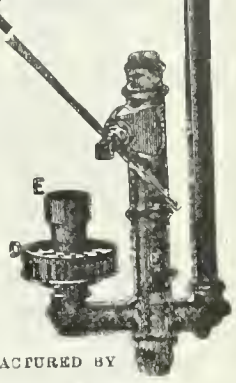

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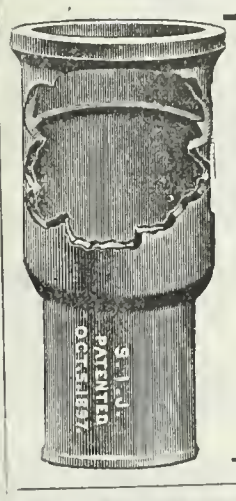

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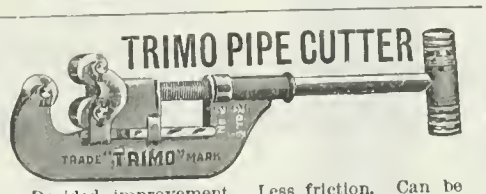

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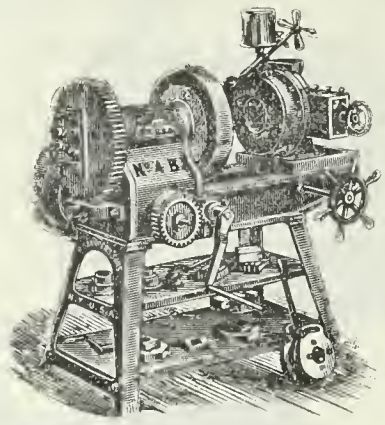

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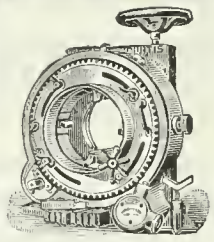

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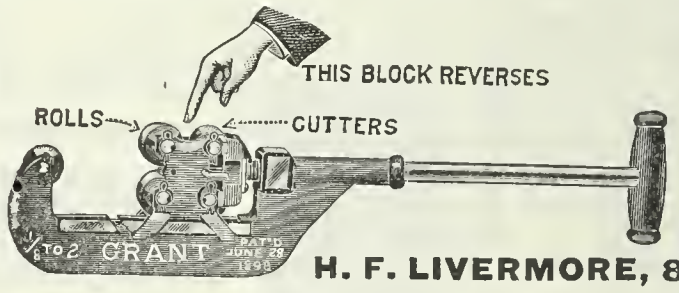

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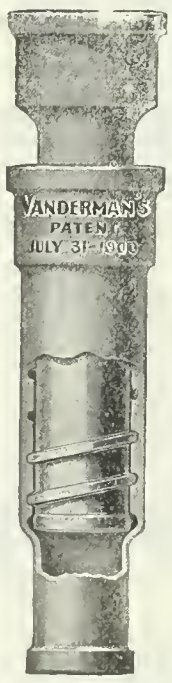

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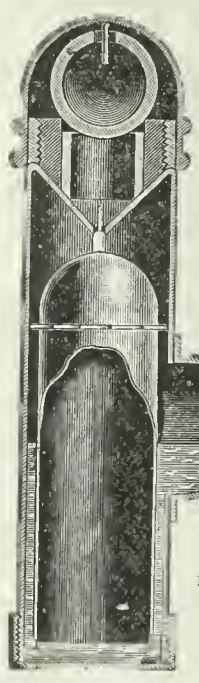

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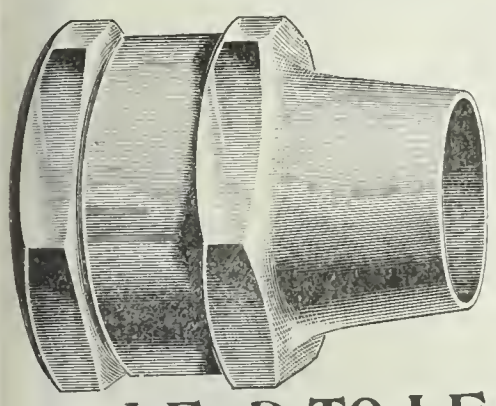

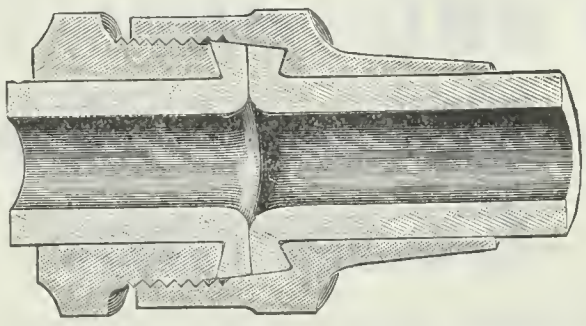

Novelty Couplings.

Lead to Lead and Lead to Iron or Copper.

LEAD TO LEAD PIPE. A Perfect Substitute for Wiped Joints.

WATER BACK, FAUCET, BOILER COUPLINGS, Etc.

SEND FOR COMPLETE CATALOGUE.

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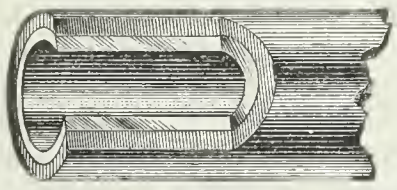
TIN LINED

IRON PIPE.

For Pure Water.

Avoiding without extra expense all danger of lead or brass poisoning.

L. & R. PIPE.—Patented.



This lining cannot be torn from the pipe even by bending or by hot water.

LEAD LINED

IRON PIPE.

Made the Same Way.

LAMB & RITCHIE, Cambridge, Mass.

WE ARE BOUND TO PLEASE YOU.

$4.50 Net.

If you are looking for a Fire Pot or Torch, send for our catalog. ***It's free and is worth dollars to you.*** It tells all about the largest line of Fire Pots and Torches in the world. Your nearest jobber will supply anything we make at factory price. ***REMEMBER,*** if the Fire Pot you purcha e bears *our* name, ***it means your money back if it does not please.***

CLAYTON & LAMBERT MFG. CO., Detroit, Mich.

GEM

GASOLINE

SOLDERING FURNACES.

UNEXCELLED, UNEQUALLED, UNRIVALLED

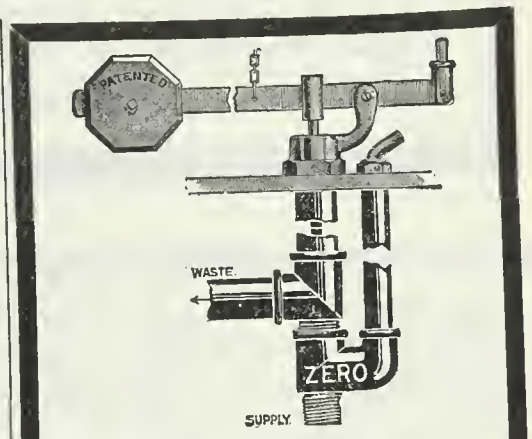
FOR HEATING AND OPERATION.

NO SMOKE, NO ODOR, NO NOISE, SAFE, SURE, DURABLE.

WRITE

Burgess Soldering Furnace Co.,

COLUMBUS, O.



SAVE HALF

The expense of installing closets by getting

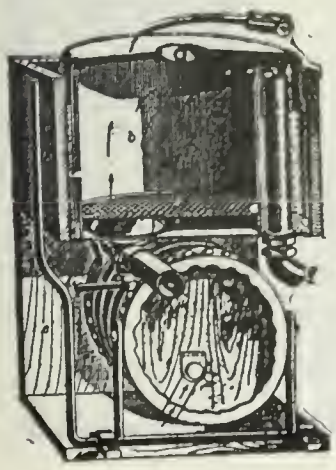
Zero Anti-Freezing Valves.

They can be put in with half the time and half the labor because they do not require a pit or vault.

They are simple and durable in construction—made without screws, springs or pins.

Zero Valve & Brass Mfg. Co.,

296 Seneca St., Buffalo, N. Y.



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For Testing Plumbing

WRITE US FOR BOOKLET AND PRICE.

GUNSTER & FORSYTH,

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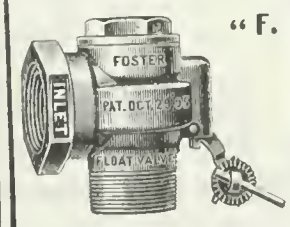

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High and Low Pressure

NevRIeK Float Valve

Iron Pipe 1-2 inch to 6 inch Inclusive.

SEND FOR CATALOGUE.

F. W. FOSTER MEG. CO.,

12 Portland St, Boston.

There's only one Warm Air Generator.

THE KELSEY WARM AIR GENERATOR has been known by this name and so advertised for twelve years, and is manufactured solely by the Kelsey Furnace Company, Syracuse, N. Y.

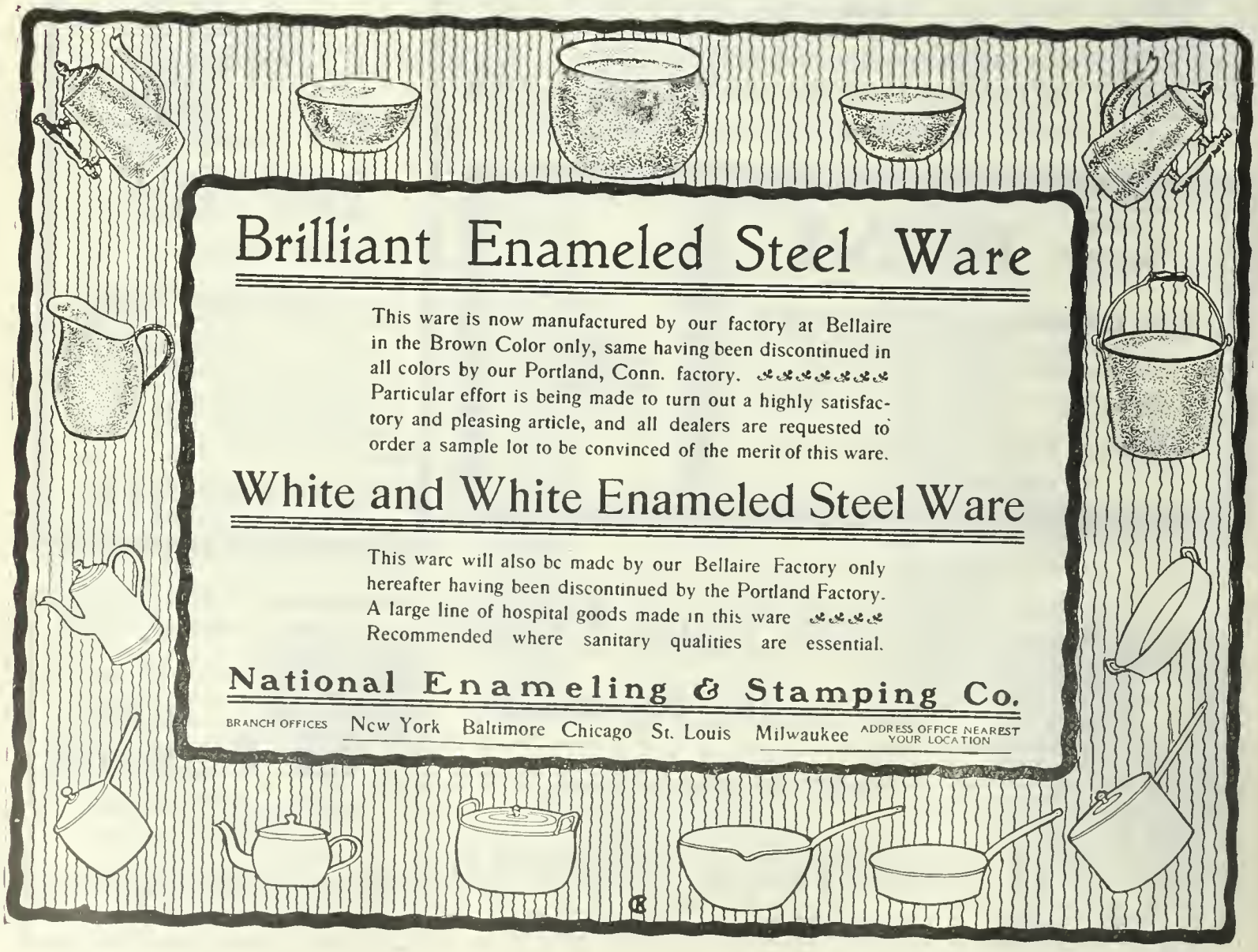
The splendid results obtained with the "Kelsey" are becoming better known each year, and the demand for them has increased so rapidly that a certain firm or company, hoping to reap some of the benefits of the now famous "Kelsey," have used the term "Warm Air Generator" in connection with a heater they make.

The construction, however, of the Kelsey Warm Air Generator, being fully covered by patents, will be protected and cannot be successfully imitated.

The Kelsey Warm Air Generator will increase your business.
The Kelsey method of warming the air is the best method.

KELSEY FURNACE CO., SYRACUSE, N. Y.

Makers of the Kelsey Warm Air Generator.



Brilliant Enameled Steel Ware

This ware is now manufactured by our factory at Bellaire in the Brown Color only, same having been discontinued in all colors by our Portland, Conn. factory.
Particular effort is being made to turn out a highly satisfactory and pleasing article, and all dealers are requested to order a sample lot to be convinced of the merit of this ware.

White and White Enameled Steel Ware

This ware will also be made by our Bellaire Factory only hereafter having been discontinued by the Portland Factory.
A large line of hospital goods made in this ware
Recommended where sanitary qualities are essential.

National Enameling & Stamping Co.

BRANCH OFFICES New York Baltimore Chicago St. Louis Milwaukee ADDRESS OFFICE NEAREST YOUR LOCATION

THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, September 21, 1901.

DAVID WILLIAMS COMPANY, - - PUBLISHERS.

BUSINESS OFFICES:

NEW YORK.....232-238 William Street.
PHILADELPHIA.....117-119 South Fourth Street.
BOSTON.....33 Mason Building.
PITTSBURGH.....Room 509 Hamilton Building.
CHICAGO.....1205 Fisher Building.
CINCINNATI.....Rooms 22-24 Pickering Building.
ST. LOUIS.....1205 Chemical Building.
CLEVELAND.....312 The Cuyahoga.
LONDON.....Hastings House, Norfolk St., Strand.

Volume LVI.....No. 12
Index to Reading Matter.....Page 632

William McKinley.

Truly can it be said that the heart of the entire nation has been wrung by the tragic ending of the life of William McKinley. The universality of the mourning for the murdered President is not more evident than its sincerity. To the memory of very few personages in the world's history have such splendid tokens of reverence and affection been rendered as those witnessed this week. During his whole public career William McKinley identified himself closely with the people who had intrusted him with position and power and who had learned to love and trust him for his high standard of devotion to duty, his patriotism and his sagacious judgment in the conduct of affairs no less than for his admirable personal qualities. His career was typically American. As soldier, as Congressman, as Governor and as President his public services were brilliant, consistent and honorable. In all the relations of his life, both public and private, his character was without fear or reproach. History will record that under President McKinley this country attained a remarkably high degree of prosperity and secured a leading place among the nations of the world. Worthy to be engraved upon his monument and to live in the minds of his countrymen are the words uttered by him in his last public speech at the exposition on the day before his assassination: "Let us ever remember that our interest is in concord, not conflict, and that our real eminence rests upon the victories of peace, not those of war."

American manufacturing industries have lost in William McKinley a consistent, eager and intelligent champion. During his long public career he kept in close touch with the productive industries and acquired a profound and accurate knowledge of their requirements. An acknowledged leader during a long and bitter struggle, he rose as his opportunities grew, and only a few days before he fell under the assault of an assassin he had outlined, in precise and convincing terms, the policy which changed conditions and progress hold out as likely to be most beneficial to our country. The loss of such a leader, under circumstances so distressing, will be sorely felt by our great manufacturing industries. The confidence in the earnestness and ability of a man like William McKinley is of slow growth. There must be a period of watching and waiting until his successor has justified his claim to those qualities which are the conditions of leadership. The blow of the loss inflicted and the uncertainties involved in a change fall upon the country at a time when, as Mr. McKinley himself so vividly pointed out in his last public speech, we were enjoying unexampled prosperity. The hope is justified that there will be no wavering in our advance, it being certain that our progress will not be stayed.

The Difficulties of Consolidations.

That the consolidation of manufacturing interests, even though covering a good proportion of the product affected, does not in itself secure exemption from the difficulties and misfortunes of trade finds another illustration in the annual report just rendered by the Standard Rope & Twine Company. From this it is seen that the business of the past year was very unsatisfactory, resulting in a loss of $500,000, as against a small profit the year preceding, while on $12,000,000 of capital stock no dividend has ever been paid. Some of the troubles of the company are ascribed to the violent fluctuations during the year in the price of hemp, of which under a heavy advance the company found itself short, and so was obliged to cover at a loss. The arrangements made for the marketing of their products also proved expensive and unsatisfactory. Meanwhile outside competition has been aggressive and growing. In the opinion of those who are well informed in regard to the matter the very liberal values at which the different plants were originally taken in has much to do with the difficulties by which the company have been confronted. Experience in this case enforces anew the futility of looking to consolidation as a sure remedy for the ills of trade. Wisely effected and administered the union of manufacturing interests is often permanently advantageous, but there are peculiar dangers connected with both the organization and the administration of such enterprises.

The Stability of Our Business Interests.

The manner in which the financial and mercantile interests have withstood the shock occasioned by the President's lamented death is not only a renewed testimony to the strength of our institutions, but also an indication of the substantial basis upon which the prosperity of the country rests. It is evident that the wheels of commerce and industry will continue to revolve and that the country will still enjoy a widespread prosperity in which practically all classes will have their share. In connection with President Roosevelt's induction into office, apart from the personal respect and confidence with which he is regarded, it is gratifying to note that he has already indicated his recognition of the importance of maintaining and extending American trade, a policy which wisely carried out will give to this country, in its relations with the markets of the world, a still more commanding position.

The Importance of Careful Buying.

No commercial business can be successful unless goods are sold at a living profit, and in sufficient quantity. In these days of fierce competition the selling price must be such as will not only retain but at the same time attract trade.

In order that such selling prices may be realized, and

still a profit secured, purchases must be made at the lowest possible figures.

A very decided advantage comes to the close buyer. He can sell at the same prices as his less careful competitor and make a longer profit, or he can cut or undersell him and make the same profit. He is more likely to attract trade and thereby do a larger and an increasing business.

Plumbers and sheet metal workers are not always the most careful buyers. The reason for this, in part at least, may be found in the fact that they are not simply merchants in the ordinary sense of the term. As a storekeeper and a seller of regular goods, the plumber or metal worker is a merchant, but as a repairer or more especially as a sanitary or artistic expert, as a preventer of disease, and as a maker of special articles, he has something of a professional position, and bases his charges on the cost of materials used and the labor spent upon them, adding a fair profit and something for the special knowledge required.

In work of this character, in which labor and skill are a large part of the charge, it is not quite so essential that there be the same care in the buying which is indispensable in the case of the simple tradesman. At the same time careful buying will yield the merchant plumber or metal worker additional profits, as surely as it does the tradesman. The difference is that the former can often exist and not buy carefully, while the merchant must buy with care or not succeed in his business.

Time spent in buying is by no means wasted. It yields a larger result than any other time spent in the store. Profits are increased, opportunities for enlarging business are discovered, and one's position in the trade is improved.

Some small dealers labor under the impression that jobbers and manufacturers favor customers who do not try to buy closely. They think that the extra prices paid buy accommodations. This is a grave mistake. Commercial houses of standing prefer to deal with men who do business according to business principles. They will esteem and favor the man who knows what he wants, who is posted in regard to the market, who appreciates the right thing when he gets it, who pays his bills promptly.

Exports from the United States for the 12 months ending August 31, 1901, amounted to $1,500,613,236. This is the first time in the history of our export trade that the figures for a 12 months' period have crossed the billion and a half line. The Bureau of Statistics of the Treasury Department, in its monthly statement of imports and exports, gives the total of exports for the last 12 months and compares it with the corresponding 12 months in preceding years, showing that the exports during the five-year period from August 31, 1896, to August 31, 1901, increased more than 50 per cent. In the same period the imports increased less than 15 per cent. The phenomenal growth in exports from this country is also illustrated in another form by the fact that the monthly statements for more than two years past have not fallen below the $100,000,000 line. This showing is one to inspire a pardonable pride and gratification.

A preliminary statement giving the status of the manufacturing interests of the State of Connecticut and of the principal industrial centers of that State last year, just issued by the Census Bureau, shows that there were in 1900 9128 manufacturing establishments in Connecticut yielding a total product of $352,824,106. The capital employed was $314,696,736, an increase of 38 per cent. over 1890. The total wages paid to workers in Connecticut industries in 1900 was $82,767,725, an increase of 24 per cent. over 1890. The increase in the number of manufacturing establishments in the State amounted to 33 per cent. and their production to 42 per cent. New Haven leads the list of manufacturing centers with 1236 establishments and an annual output of $40,762,000, Hartford coming second with 832 establishments and nearly $38,000,000 output, and Waterbury, Bridgeport and New Britain following. Of the cities named Waterbury showed the greatest gain—namely, 90.7 per cent. over 1890.

Still again the art of tempering copper has been discovered, this time by a resident 'way down in Maine. As usual, he has been experimenting for years and has experienced all the customary drawbacks. Report has it that he has exhibited a copper hatchet with an edge apparently as keen and strong as steel, also a stone chisel and several broadswords.

The Labor Troubles in the Iron Trade.

It is to be hoped that the termination of the strike in the rolling mills of the United States Steel Corporation will mark the end for a long time of labor disturbances in the iron trade. No other branch of manufacturing industry has been so seriously disturbed from this cause during the past fifteen months. Last year the Western bar iron mills, the sheet mills and the tin plate mills were closed in consequence of a disagreement over the wage scale for more than three months, and this year the sheet mills and tin plate mills, with some of the Western bar mills, have again suffered from protracted labor troubles, which have thus caused considerable restriction of production. Not only have the manufacturers of iron and steel rolled products been harassed from this cause, but manufacturing consumers have to a great extent been seriously embarrassed in the prosecution of their operations.

The interference with business resulting from these strikes has not alone affected the operations of these companies. The general public has been interested in a great many ways. The numerous local tradesmen depending on the patronage of the workmen in the mines and mills have had their business seriously restricted and undoubtedly failures have been caused among them. Transportation on the railroads has been cut down, and the operations of manufacturing consumers depending on the production of the mills closed by strikes have been greatly injured. In some cases it has actually been necessary to close factories simply because the materials necessary could not be obtained from other sources to enable them to continue in operation.

The workmen who have been concerned in these labor troubles should take to heart their disastrous experience and permit the iron trade to have a long rest from any similar occurrence. It would be well if the iron trade could be kept entirely free from any disturbance of this character for a long period of years. It seems in looking back over these difficulties that not one of them was justified. In fact, most of them were due to circumstances which now appear to have been of a trifling character, such as should have been settled within a few hours, or at furthest a few days. Bitterness has been engendered in addition to the heavy loss in wages, and in numerous instances lucrative positions have undoubtedly been sacrificed whlch are now being filled by other men. The whole history of these various occurrences is deplorable, particularly when viewed from the standpoint of the workmen themselves. They were the principal sufferers. They have found that even though the employing companies consist of corporations whose stocks are quoted in Wall street, that fact did not deter the managers of the corporations from strenuously resisting the claims made by the men. This is an unexpected development, as the leaders of the men had supposed that the Wall street connection would make these companies exceedingly vulnerable to such an attack. The resistance which has been made so successfully should convince them that in the future no unreasonable demands can be made with any hope of success. The lesson has been expensive to all parties concerned, but it should have a wholesome effect.—*The Iron Age.*

THE WESTERN STOVE TRADE.

Western stove manufacturers are now looking for a great increase in the demand for heating stoves. The forerunner of this demand is the increased business which they have recently been doing in filling orders for stove repairs. This indicates that heating apparatus is being overhauled and put in shape for the advent of cold weather. As people usually defer action of this kind until cool winds cause them to seriously think about artificial heat, it is to be expected that new stoves will be found needed in many cases, and orders for these will be hastily sent in. The first orders for stoves have seldom been of sufficient size to enable dealers to stand much of a run on their stock. One or two frosty mornings will bring the demand up to the manufacturers, and they will in every instance be expected to ship the stoves from their warehouses immediately upon receipt of the order, whether it is received by mail or wire, and even though it may find the shipping department working overtime on similar "hurry-up" orders.

Charles W. Adams.

Charles W. Adams, who for many years was prominently connected with the stove trade, died on Tuesday, September 10, at Virgil, Ill. Mr. Adams was born in New England and had attained an age of over 70 years. He was a practical molder, having learned his trade in Massachusetts, and for a long time was employed in the old Boston & Maine Foundry in Boston. He was also a singer of marked ability, winning distinction among professional vocalists while a young man. Mr. Adams was a veteran of the Civil War. He was wounded at Fredericksburg, Va., and the wound was so severe that it compelled his discharge; but upon his recovery he re-enlisted and served through the war. On resuming his occupation as a molder he became connected with the stove trade. He was for a time foreman for the Fuller & Warren Company, at Troy, N. Y., and was afterward engaged in the same capacity by Perry & Co., at Sing Sing, N. Y. About 1882 he became connected with the Chicago Stove Works of Chicago as foreman of the molding department, and was soon promoted to be superintendent. During his incumbency of this position the long lockout at the Chicago Stove Works occurred, in 1885. Advancing years caused his practical retirement from active duties in 1895. Since that time he has been rendering such service as his age and declining health would permit, severing his connection permanently a few months since.

Anchor Stoves and Ranges.

The illustrated catalogue and price-llst known as No. 36 which has been issued by Terstegge, Gohmann & Co. of Louisville, Ky., presents an extensive assortment of Anchor stoves, ranges and heaters for the season of 1901-1902. Steel ranges occupy a number of pages in the early part of the catalogue, these embodying the modern lmprovements, and are offered in sufficient styles and slzes to meet all reasonable requirements. The cast goods are of attractive exterior and are up to date ln all respects. The leading place among the heaters is given to the Anchor radiator, which is of rich ornamentation and is made in several sizes. It is intended for using soft coal as a fuel, and it is claimed by the manufacturers to be especially suited to this climate, because, owing to lts air tight construction, the fire ls under perfect control and can be made to burn fast or slow. Other goods includc attractive oak constructions and surface burners, cottage parlor, globe, cannon and laundry stoves. Miscellaneous goods and stove hollow warc complete the catalogue.

A POSTAL CARD which is being sent out by the Gobeille Pattern Company, Cleveland, Ohio, refers to a cheap Oak Stove which they havc designed and which is likely to be of interest to Stovc manufacturers generally. By a simple improvement in the base, retaining the ash pan and a few other expedients, a Stove has been designed which presents an attractive appearance, and yet the company state the weights will not go above 8 pounds per inch fire pot diameter.

A REMEDY FOR ALL STOVE TROUBLES.

This is the time of year when stove dealers are so busy selling stoves that they overlook many of the little details that will be sure to make them trouble before the year dies. Complaints will come in that the range doesn't bake; that the stove doesn't heat; that no heat comes from the register to the upper room from double heating stoves; that the grate was made of poor iron and melted with the first fire, and a multitude of kindred reflections on the honor of the stove dealer who palmed off poor apparatus on his confiding customers. This year being 1901, the beginning of a new century, may be a miraculous one and the usual complaints may fail to materialize. But I have strong doubts in the matter, and, feeling that I should be glad to alleviate the troubles that I am satisfied must come, I will suggest a few points which all the young men in the trade can use to overcome any of the difficulties that may be brought to their attention.

In the first place, all of the air that goes out of the top of the chimney should only find entrance to it through the draft slide in the stove connected with it. If my young friend will carefully consider this rule he will see to it that the chimney is properly constructed before he connects the stove with it. He will then be careful to see that the stove pipe does not enter too far in tne chimney and that the stove pipe hole will permit the use of a collar on the pipe, so as to practically cut on the entrance of any air around it into the chimney. He will go further, in case of a complaint, and examine the stove to see if putty has been omitted from any of the joints, or has been shaken off in shipping. For if air can get in at some unexpected point it will surely cut off the draft, make the parlor stove throw out gas and fail to prove a strong heater, and it will make the kitchen stove get red hot on top and fail to bake.

There is an old axiom that two things cannot occupy the same space at the same time. If a parlor heater has a pipe run up to a register in the floor of a room above, it is a perfectly safe conclusion that the upper room cannot be heated if the air that is in the room cannot in some way get out and make room for the hot air to enter through the register. It is not always well to open a door to another room, for it is probable that the stove will not heat the two rooms. In some instances benefit has been derived by placing another register in the floor of the room and a fretwork plate on the ceiling of the room below, so that the cold air in the upper room can drop down into the room where the parlor heater is located, and thus set up a circulation which will aid the heating of both rooms.

The third point is in reference to the burning out of grates. Foundrymen melt pig iron by placing a strong heat underneath it, and as the cupola is run oftentimes there is heat both under and above the pig iron to be melted. Now if this is the practice in melting iron in foundries, the iron in the grate of a stove can only be melted under the same conditions. These conditions are often found in stoves, particularly where the ash pit has not been cleared of the ashes and a new lot of hot ashes and coals are shaken through the grate so as to lie underneath it and very close to it. Then, when a draft is given to the stove, these coals underneath burn up very hot, and, with the hot coals and ashes underneath the grate and the hot fire above it, thc grate will be sure to melt or warp so as to be unfit for further service.

Three main points have been given here which are the basis on which all investigation of troubles relating to stoves may be made. There is no mystery in anything that pertains to the operation of a stove. Its satisfactory operation is a very simple matter and there is nothing difficult to understand about it. Whenever any of the modern stoves give trouble on any of the points mentioned, there is no occasion for any worriment of mind to find out some peculiar, unusual or extraordinary thing. All that is required is a start along the lines presented for the discovery of some infraction of these ruics which cannot be violated without causing trouble. These investigations can be made just as read-

ily by the younger men employed in the establishment as by the gray haired veterans.

Such investigations and the treatment of customers must always be done with a most liberal use of common sense and courtesy. If a customer has a wrong idea, a blunt statement of the fact should be avoided. When people are wrong they are not any too anxious, as a rule, to be told so, and they should be made aware of their position by a careful explanation made in the most courteous manner. Their confidence will be gained and their good will retained if a course is pursued which allows their common sense to reach the same conclusion which the expert knows must be the final outcome. It is better to proceed on a courteous explanatory course in most instances than on any other. When an unreasonable customer is found, then patience and endurance must be used in addition to common sense and courtesy, and his impatience and unreasonableness will be worn out by a continued good natured deference to his position, accompanied with a reiteration of the facts that will never vary. The largest drafts that will be made on those who come in contact with complaining customers will be on their general information and good nature.

The Clover Triumph Range.

We illustrate herewith the Clover Triumph range, which is being manufactured by the Philadelphia Stove & Iron Foundry Company of Philadelphia, Pa. We are

The Clover Triumph Range, with Oven Door Open, Showing Draw Out Shelf.

informed that this line of ranges, which is furnished in three styles, with three sizes of ovens, embodies a number of improvements and labor saving devices not found in connection with any other range of its class. The ranges are described as "rich in design, perfect in workmanship and manipulation and made specially to appeal to particular people." A noticeable feature of the line is the automatic oven itself, a device patented December 4, 1900, and now being furnished only with the Clover Triumph ranges. This arrangement, which is simple and effective, is fitted directly to the oven door, and by the ordinary movement of opening which the shelf is drawn out of the oven and is supported by the door, a weight of 20 pounds or more being safely and conveniently carried. On closing the door the shelf is automatically returned on the slides to its position in the oven and is released by a slight turn of the door knob. This also enables one, if so desired, to open the door without withdrawing the shelf. The Philadelphia Stove & Foundry Company report a heavy demand for this line of ranges, the special oven attachment meeting with great favor.

HOW TO SELL STOVES.

BY OBSERVER.

This is a problem that is interesting both to the wholesaler and the retail stoveman, for on its solution depends the profit or loss to those engaged in the trade. Naturally the burden of labor, enterprise and work of increasing the sales rests largely upon the manufacturers. But, unfortunately, they cannot do all that is necessary. Moreover, they have the right to expect that the stove dealer shall make persistent, continuous and intelligent effort to this end. They are always ready to give him the benefit of their best ideas, so there is no excuse for the dingy, unattractive array of stock in this line which many stores contain, nor for the perfunctory attention given to customers and the delay in naming a price, due to want of information, that are so often experienced by the buyer, and which really show a negligence that is entitled to no consideration.

MAKE NEAT DISPLAYS.

That this portrays the condition existing in many stores where stoves are sold is indisputable, and yet manufacturers protect all dealers alike, by selling them goods at special prices, while refusing more money for the same stoves from individuals who are not in the trade, thus reserving their product to be disposed of through the trade channels, so that the stove dealer can arrange to get profitable prices. The manufacturer has a perfect right to expect that all who are so favored will keep up with the progressive spirit prevailing in all other lines of retail trade. It is only fair that the expenditure in effort and advertising by stove makers to popularize their product should be supplemented by an expenditure of at least a portion of the profits derived from trade protection, as well as by courteous salesmanship and an active canvass to bring the stoves to the attention of the people in the community where the retail stove dealer has his store. The sample rooms of the manufacturers are good examples of how the retail dealer should display the stoves in order that the first impression received by prospective purchasers may develop into a sale at a fair price.

PLAN METHODS.

All businessmen have some dull periods, and these should be utilized to plan methods for increasing their sales. This is particularly true of those who handle stoves, as the principal rush in these goods comes in the fall, when the greatest amount of trade is secured by those who have used means for bringing it to their stores. It is useless to complain of the furniture and other stores taking away the business of the stove dealer. The thing for the stove dealer to do is to adopt similar methods to those used by such houses. People buy their clothes, groceries and even their pills where they are presented most attractively, and where they are treated most courteously. Sales are more likely to be made where the goods receive the best description of their manufacture and features of merit, as well as explanation of their operation and use, by salesmen who are courteous in their manners and neat in appearance.

ADVERTISE.

If the stove dealer should place in his local paper an advertisement as interestingly worded as those of the dry goods or notion houses, people who have but a passing interest in the matter would be apt to drop in to see what he offered for sale. If a boy put a circular in their market basket or put it under their door, consideration would be given to the enterprising house who thus attract their attention. If the department store, installment house, or furniture dealer uses this means to bring trade to his establishment, and has stoves for

sale, the stove dealer has so much greater need for adopting similar methods. Nobody ever saw a fly paper covered with flies, neither will every advertisement or circular bring in a lot of customers. They can be depended upon to bring in some, and when they do come they must be made to feel perfectly welcome and at home, and be given interesting information that they will remember. There is nothing new under the sun, and it only needs an intelligent explanation of any old thing to give the visitor a pleasing impression which may lead to a latent want being developed into an active demand, and result in a sale.

POINTS TO BE REMEMBERED.

The stock of the stove dealer must be clean, as well as the place in which it is displayed. It must be well arranged and not too crowded. A study of the stove, range, parlor heater or furnace must be made so that the salesman will be thoroughly familiar with its special recommendations. The circulars of the manufacturer and the explanation of the traveling salesman should be carefully considered to aid in impressing customers favorably. It is not enough for the proprietor to have this information, but they should be explained to his assistants until they thoroughly understand them and can bring out all the points of the goods in an entertaining and instructive manner.

CONSULT WITH SALESMEN.

To plan such a method of selling and keeping stock and to keep the whole scheme going will require mental effort and physical energy. Benefit will be derived from thinking and planning out several base plans with suitable diversions and talking them over with the boys or men who must be largely depended upon to carry them to success. Such consultations with those who sell is absolutely necessary for success. It is the custom with some of the best houses to call their salesmen together periodically and hold what is practically a school for selling. It is an excellent practice, and should be followed by the stove men. Those who sell stoves and do plumbing, tinsmithing or any other kind of mechanical or mercantile business cannot afford to let their stove trade be taken away from them. It cannot be done if the suggestions outlined are not only taken up and followed, but improved upon. Any stove dealer who has ambition along these lines and needs assistance need only visit the private office of the stove manufacturer that he buys from, and explain that he wants to push his stove business, and he will be sure to get valuable assistance, and the dose can be repeated whenever he applies.

CREDIT SYSTEM AND COLLECTIONS.

The season for stove selling is now at hand, and those who have not formed any special plan should carefully observe all the little incidents that might have added to their fall trade and make notes of them, so that when the dull season arrives they may formulate a plan for some other season which will enable them to gather in a larger stove trade. If they have to compete with the credit system they should find out all the details of using it. Care should be taken to arrange for the payment of the bill for the stove when the sale is made. This will greatly facilitate the collection of it, and will enable the dealer to meet the bills of the stove manufacturer when they come due. These are the methods of those who have made inroads in the stove trade, and their adoption will benefit the regular stove dealer, who, by all means, should not let men who know less about stoves than he does walk away with the profitable branch of his business from want of a little enterprise on his part.

The March-Brownback Company of Pottstown, Pa., are about enlarging their manufacturing facilities, and have awarded the contract to Davidheiser & Wiand for an addition to their foundry which will give them accommodations for 15 more molders. The new building will be 60 x 55 feet in size and is to be located between the foundry and cleaning department, where the pattern shop stood before the fire and which has never been rebuilt.

The B. C. Bibb Stove Company.

We have received from the B. C. Bibb Stove Company of Baltimore, Md., copies of two catalogues which they are sending out, one relating to the leading lines of fire place heaters which they manufacture, and the other to hot air furnaces. The former consists of 30 pages and gives among other things a brief history of the Baltimore fire place heaters, which are miniature furnaces to be put in fire places in the same way as open grates, either with or without mantels, for the purpose of warming the room above as well as the one in which the heater is situated. They are self feeding and illuminating, giving much the same cheerful effect as the low down grate. The heaters are offered under the names Lombard, Arundel, Capitol, Washington, Grand, Diamond and the Radiant. Sectional views are presented in connection with directions for the proper manner of setting Bibb's original Baltimore made fire place heaters, after which are many pages giving testimonial letters from those who have used the goods.

The catalogue of hot air furnaces consists of 42 pages and illustrates and describes the Bibb sanitary hot air furnace, which is made in portable form and also for brick setting. A feature of the early pages of the catalogue is directions for setting furnaces so as to give the most satisfactory results in operation. Several tables are presented showing the capacity of pipes and registers, and reference is made to the Peerless improved sanitary hot air heater, made in three sizes for hard or soft coal. Nearly one-half of the catalogue is given up to testimonial letters, and there is in addition a list of names of those who have the Bibb sanitary furnace in use.

Art-Garland Base Burners.

The Michigan Stove Company have issued a special trade edition of the *Garland Magazine*, which is devoted to the subject of base burners. Their full line of base burner is illustrated, comprising the Art-Garland Junior, Art-Garland modeled series, Sunlight-Garland, Art-Garland home series, Art-Garland new series, Art-Garlaud duplex series and Art-Garland reflection top. This line of base burners comprises an extraordinary variety, enabling the taste of any buyer to be supplied. The assortment extends from moderate priced to the most expensive construction, but all are tastefully designed and artistically decorated.

Among the distinctively new styles shown in this collection of stoves is the Sunlight-Garland for anthracite coal and crushed coke. This stove is of Colonial design, and is a decided departure from the type of base burner so long the favorite in the trade. The body of this stove is made of Wood's best polished sheet steel. Inserted in the steel are a number of mica doors which furnish full illumination. The internal construction is the same as that found in the standard Art-Garland line. Ample hot air circulating flues are provided. The appearance of this stove while unique is certainly very attractive. The finest stove shown in this collection is, of course, the Art-Garland reflector top, which is characterized as the "Emperor of base heating stoves." This stove is a fine specimen of elaborate ornamentation.

ODD PLATES.

An interesting little booklet which is being distributed by Rathbone, Sard & Co. of Aurora, Ill., bears the title, "Points of Excellence in the Acorn Line." This is a special booklet brought out to commemorate the 71 years during which Acorn Stoves have been manufactured. As the title indicates, the little work presents a description of the goods made by the company named, each line of goods receiving brief comment, and all in a way to interest the dealer. For 59 years Acorn Stoves were made only in Albany, but in 1890 a large plant was established at Aurora, Ill., both establishments having a total capacity of over 100,000 Stoves annually. In 1830 there were 35 names on the pay roll, while at the present time there are over 1200. Since the foundry started in Albany the record shows a total of over

4,000,000 Stoves made and distributed over every State in the Union and in nearly every country on the globe. The little book will be found of particular interestt to salesmen and dealers, owing to the many "selling points" which are contained within its covers.

THE ST. LOUIS STEEL RANGE COMPANY of St. Louis, Mo., is the name of a new concern just incorporated, with a capital stock of $2000, by Louis Y. Winter, Frederick L. Neal, William C. Moore and Charles Reber.

THE ODIN STOVE MFG. COMPANY of Erie, Pa., are sending out a 40-page catalogue and price-list illustrating and describing Odin Gas Heaters and Appliances for the season of 1901-1902. The leading place is given to the Tri-Process, which is substantially made of cast iron throughout, with the exception of the radiating tubes, which are of planished steel. Various forms of the Odin Gas Heater are shown, with open and closed front; the Bengal Odin, built entirely of steel and designed to sell at a low price, together with Circular Heaters, Burners, Mixers, &c.

THE CHARTER OAK STOVE & RANGE COMPANY of St. Louis, Mo., with their customary enterprise, have recently sent out some very neat and attractive novelties. One is an aluminum coin with a bright 1901 cent indented in it, and bearing the words "Good Luck" on either side. Above the cent are the emblems of good fortune—a four-leaf clover, a horseshoe and a wish bone. On the reverse side reference is made to the coming St. Louis World's Fair in 1903. The second novelty is a miniature of a Charter Oak Range in the form of a charm, in bright gilt finish.

SOME leaflets which are being distributed by the B. C. Bibb Stove Company of Baltimore, Md., call attention to a few of the attractive Stoves and Heaters which this enterprising house are offering the trade. Mention may be made of the Bolton Double Oven Portable Range, which is suited to the requirements of a large family, restaurant or small hotel. It is heavy in construction and attractive in its ornamentation. Another novelty in the Severn, a four-hole Cook Stove, made in two sizes and furnished with the modern improvements. In the Druid the company have a very attractive Air Tight Heater, with cast front and sheet iron body. It has cast inside sectional linings 12 inches high, encircling the entire inside of the body and protecting it from the fire. There is a swinging smoke curtain inside the feed door and a boiler hole in the top, underneath the fret work swing cover. Another air tight, intended for burning wood, is known as the Wizard. It has heavy cast top and bottom, the latter being dished and ribbed to insure strength and durability. It is made in three sizes.

THE EUREKA STOVE & HEATING COMPANY of Illinois have filed articles of incorporation with Secretary of State Cook, at Jefferson City, Mo., the capital stock being placed at $2500. Of this amount $1500 is to be employed at Puxico, Mo.

WE have received from the Abram Cox Stove Company, Philadelphia, Pa., a reproduction of a photograph of the late President McKinley, which the company are distributing, not as an advertisement, but as a souvenir of one of our most able Presidents. The company state that this was considered by Mr. McKinley to have been his best photograph, and that he selected it as his official likeness. In referring to the President the company, in a letter which they are sending with the picture to their friends in the trade, say that he was "a man who will go down to history as the central figure in the panorama of our years of greatest prosperity, and we sincerely trust that, in the interest of true Americanism, you will have this picture framed and hung where all who enter your office may see it."

A. C. BARSTOW of the Barstow Stove Company, Providence, R. I., arrived in New York this week from a short trip abroad. His first news of the assassination of President McKinley was received at Gibraltar, and he was quite overwhelmed to learn of his death when the steamer reached the Nantucket Shoals lightship on September 17.

HENRY SWARTZ, manager of the Philadelphia branch of Charles C. Heath & Co., Baltimore, Md., manufacturers and jobbers of Stoves, Ranges and Heating Goods, reports a very favorable condition of trade at this time. Mr. Swartz has recently returned from a trip to Northern New Jersey and Pennsylvania, and says "he found all his old friends, and they were all more than ever with him."

THE B. C. BIBB STOVE COMPANY, Baltimore, Md., have recently occupied their new building, which adjoins their store on Light street. The building, owing to the extensive and growing trade of the company, was a needed improvement. It is 80 x 37½ feet in size, of brick, with Indiana limestone trimmings, and five stories in hight. The addition enables the company to double their capacity for the display and sale of goods, having a plate glass show window frontage of 80 feet on the first floor, and additional facilities for storage and manufacturing purposes on the upper floors. The Bibb Company announce that the fall season's trade has been quite satisfactory with them; in fact, even better than last year, and the conditions for future trade are considered very good.

Philadelphia Hardware Merchants' and Manufacturers' Association.

At a meeting of the Hardware Merchants' and Manufacturers' Association of Philadelphia, held on the 17th inst., the following resolutions relative to the death of Mr. McKinley were adopted:

Whereas, President William McKinley has been struck down by the blow of an assassin and now lies in honored state in the Capitol of these United States, which he so ably and successfully served; and,

Whereas, Our whole country stands dressed in mourning to declare its sad sense of the loss sustained in his death, while from Maine to Texas and from the Atlantic to the far off isles of the Pacific is heard the tones of sorrow and the lamentations of grief; and,

Whereas, Even foreign countries join us in these demonstrations of grief and gracefully offer to share our sorrow in loving sympathy; therefore be it

Resolved, By the Hardware Merchants' and Manufacturers' Association of Philadelphia:

That we recognize the signal ability, courageous earnestness and personal integrity of our late President, and fully realize the fact that to him were presented some of the weightiest problems and responsibilities which have come to our country since the time of Abraham Lincoln.

That we appreciate his sterling character and his manful part in bringing to our land the public security and prosperity which it now enjoys, and feel that in losing him we lose a man faithful to a high sense of duty and self sacrificing, and devoted in carrying out whatever measures were necessary for our welfare.

Resolved, That, as we mourn his loss in being struck down by the hand of treachery, we rejoice that the life and work of President McKinley will for years to come be an inspiration and help to the youth of our land.

Resolved, That we place on record this minute of our affection and esteem, and pray that the Ruler of all nations, who has guided us so marvelously in the past, may be our refuge in years to come, and may now, in this time of sorrow, bring comfort and peace to those who mourn.

The entertainment which was to have been given to the Pennsylvania wholesale hardware and supply merchants by the association has been postponed for 30 days. The assassination of President McKinley has produced such a profoundly sympathetic feeling that it would be quite incongruous to do much entertaining at the present time, hence the postponement until the middle of the coming month.

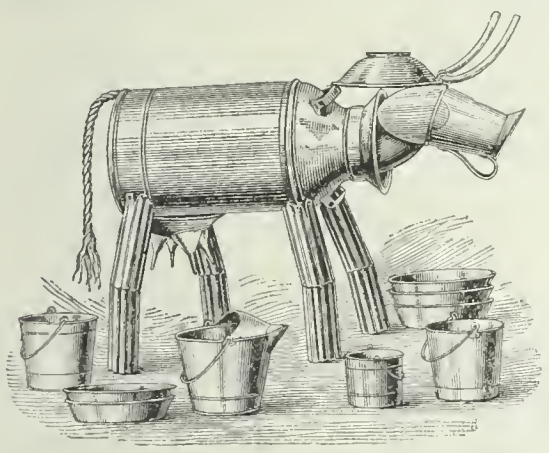
New England Hardware Dealers' Association.

The first meeting of the New England Hardware Dealers' Association for the autumn and winter season was held at the United States Hotel, Boston, September 11, at 5 p.m., G. W. Burditt, presiding. The business session was very brief. No formal entertainment having been provided at the close of an excellent dinner, J. W. Calderwood favored the company with several vocal selections, which were much appreciated, and President Burditt called upon Charles E. Adams of Lowell,

who recently returned from a trip to Europe. While abroad Mr. Adams visited many of the boards of trade and in a general way observed mercantile and manufacturing conditions in Great Britain and Germany. Being president of the Massachusetts State Board of Trade, he was entertained by similar organizations in England, and his brief address referred particularly to the workings of these organizations, and especially of the English National Board of Trade, which consists of 86 associations. Mr. Adams said that a short time ago the London Board of Trade held a meeting at which were represented 250 boards of trade of Great Britain and Ireland.

The Tin Cow.

A unique dairy supply display was made in the shape of a Tinware cow and exhibited by Frank B. Merrill, Allison, Iowa. As seen in the illustration, the body of the cow is made of a Milk Can, being supported on legs of Corrugated Pipe. The head is composed of a Tin Pitcher and a Basin, while the horns are formed of Bicycle Handle Bars. A Rope constitutes the tail, and the



The Tin Cow.

construction of other parts can be seen from picture. To complete the exhibit, Pans, Palls, Churns, Butter Bowls, &c., were placed around the cow.

This display attracted more than its share of attention. This was partly due to the fact that an illustration of the cow was used in Mr. Merrill's advertisements in the local papers, thus giving it wider publicity than is usually accorded to Bossy.

AVOIDING DUST IN STOVE AND HARDWARE STORES.

Goods would show up more attractively and much labor would be avoided if there was no such thing as dust in stove and hardware stores, and if the necessary sweeping and the shining up of the sample stoves did not cause so much of it. A remedy which, if not absolute, at least affords a material relief from the dust nuisance, has been thoroughly tested in the store of S. W. Damon, at New Britain, Conn. The simplicity of the application with the reduction of labor that attends it will make a description of the method interesting reading to many.

The remedy, which is adapted to any floor from the nice hard wood to the old rough floor that has seen much hard usage, consists of a liberal coat of floor oil, such as many dealers carry in stock and sell to customers. It is best to make the first application on a Saturday night so that the oil can soak in and not leave the floor too greasy when trade begins on Monday morning. It has been found by experience that the grease is not sufficient to be destructive to the clothing of customers, yet keeps the dust down, and the store can be well swept without raising much dust. This results in a great saving, not only in the labor of keeping the shelves and goods clean but also in the goods themselves, as they do not so soon become shopworn. The oiling of the floor when once done well need not be renewed more than once in three months unless the weather is extraordinarily dry or heavy trade brings dust and wear.

Where stoves are kept on the floor with general hardware a great deal of dust is usually raised in keeping them clean. This can be largely avoided by substituting old rags for rubbing them off in place of the brush and feather duster. When they can be had, old woolen goods are most desirable, as they are soft and reach every crevice. If care is taken to shake the dust out of these cloths out of doors, a very dusty stove can be made to look as if it had had a new shine without raising any dust in the store. The use of the cloth insures every part of the stove being cleaned, which is not the case with feather dusters or brushes. The special gloves sold for this work are very good and by their use the hands do not become begrimed. Then the nickeled parts of the stoves are not dulled if care is taken to keep them clean. These parts can be polished with clean cloths until the stove is sold, when they may need removing to receive a thorough cleaning.

Oiled floors and the use of rags for dusters will save the goods, keep them looking brighter, reduce the labor and avoid dust if some judgment is used and supervision is given to those who do the work.

Stove and Hardware Dealers.

Litchfield & Frazer, Lone Oak, Texas, have been succeeded by Litchfield & Cole, who will continue the Hardware, Stove and Agricultural Implement business at the old stand.

Goff & Daggett have bought the Hardware, Stove, Plumbing and Heating business formerly conducted by Levasseur Bros., Massena, N. Y.

Scott Bros., Harris, Mo., have disposed of their Hardware, Stove and Agricultural Implement stock to S. N. Garriott, who has removed it to Half Rock, Mo., where he is now in business.

The September dinner of the New England Iron and Hardware Association, which was to have been held at the Point Shirley Club, Boston Harbor, on September 17, has been indefinitely postponed owing to the death of President McKinley.

About October 20 the Pelham Hardware & Supply Company, Pelham, Ga., will embark in business in Pelham, Ga. Lee Hanks of Pelham is president of the company and will look after their management. The new concern will carry a full line of general Hardware, Stoves and Agricultural Implements.

Shawnee Hardware Company, Shawnee, O. T., have incorporated their wholesale and retail Hardware, Stove, Agricultural Implement and Sporting Goods business with a capital stock of $20,000. The company state that they now occupy four times the floor space they did at the beginning of the year.

C. W. Simon has lately purchased the Hardware, Stove and Sporting Goods business formerly conducted by F. E. Tackley, Pawnee City, Neb.

Hughes Bros. have recently commenced business in Rexburg, Idaho, handling Shelf Hardware, Tinware, Stoves, Sporting Goods, Furniture, &c.

C. E. Redfield & Son are successors to Irvin Underwood, Ruthven, Iowa, dealer in Shelf Hardware, Stoves, Tinware, &c.

R. L. Wupperman has bought the interest of his partner in the Hardware firm of Wupperman & Suchart, Sequin, Texas, and will continue the wholesale and retail business in Shelf Hardware, Stoves and Tinware, Sporting Goods, &c., under his own name.

William Furbish has bought the Loree Hardware, Stove, Tinware and Sporting Goods stock at Marshalltown, Iowa. The new proprietor is adding largely to the stock thus acquired.

Smith & Waterman are successors to Wyman & Waterman in the Hardware, Stove, Farm Implement, Buggy and Wagon and Sporting Goods business in Grant, Iowa. A 20-foot addition to their storeroom has recently been built.

Pediment Mitering on Wash.

A New York correspondent sends us a sketch of a straight pediment mitering on a wash and asks that we show the method of obtaining the blanks or patterns. If there is another method beside triangulation he would prefer it, but if not the latter method would do. He says that a problem of this sort would be very helpful, as many of these pediments and window caps are made in sheet metal instead of stone or granite.

The sketches accompanying the above inquiry are reproduced in Fig. 1 of the annexed diagrams. They show a cornice passing around a curved wall, upon the sloping roof or wash of which is placed the pediment in question. The line A C B of the plan, indicating the face of the pediment, shows it to have an equal projection at all points from the curved wall. Thus, while the pediment moldings are designated as straight, and it is presumed they are intended to appear straight in the front elevation, they must necessarily be curved in one or the other of two ways, according to the interpretation to be put upon the diagram. The plan leaves us somewhat in doubt as to the nature of the roof and the soffits or lower sides of the several members of the pediment molds. If the lines at A and B of the plan running toward the center X, and apparently showing the sides of the roof of the pediment at its base, are to be accepted as drawn—that is, not parallel to the line of the apex at C—they would indicate that the roof is a spiral or warped surface, and that the soffits of the moldings, which should properly be parallel to the roof, also partake of the same twisted character. If such is intended, we refer our correspondent to an article on the subject of the spiral conveyor published in our issue of April 22, 1899. The roof and all parallel surfaces, if drawn according to the above supposition, become similar to the form of the flange in a spiral conveyor. As stated in the article referred to, the blanks from which such surfaces are to be constructed require more or less stretching at both edges to bring them to the desired form. While the roof surfaces are not referred to in the inquiry, their form determines the character of the moldings of the pediment.

In Fig. 1, as in the case of many other drawings accompanying inquiries sent to *The Metal Worker*, certain disparagements exist. The distance A B of the plan, for instance, does not agree with the width of the pediment at its base in the elevation at the point marked 7′ 9″. As the drawing sent is said to be to a specified scale, it is possible that the curve A C B is intended only to show the extreme face or projection of the pediment in plan, and that the lines A and B drawn toward X are intended to show the limits of the curve rather than the base of the pediment. An interpretation which, therefore, seems more probable than that above assumed, is that the roof and all the soffits recede on straight lines, thus being simple inclined planes devoid of wind or twist. A side view of the pediment as thus constructed will appear as shown at the right in Fig. 2. Since the intersection of any inclined plane with a cylindrical surface produces an ellipse, the course of the moldings of the pediment as they follow both the curve of the wall and at the same time the plane of the roof must thus be elliptical.

The problem, according to the latter supposition, involves forms quite uncommon in architectural work, but the principles governing the same are those employed wherever a change or raking of stay is required. The forms produced by the above conditions are such, however, that while triangulation is the proper method to be employed in developing the blanks for the moldings, it is possible that other methods may be substituted. To simplify our work, we show in Fig. 2 the elevation, section and plan of a design similar to that of Fig. 1, but better adapted to the purposes of demonstration. Having less pitch than that of Fig. 1, its moldings have therefore a greater proportion of curve in a given length, while a portion only of the profile shown in Fig. 1 is used, since the treatment of the part used may easily be extended to the whole.

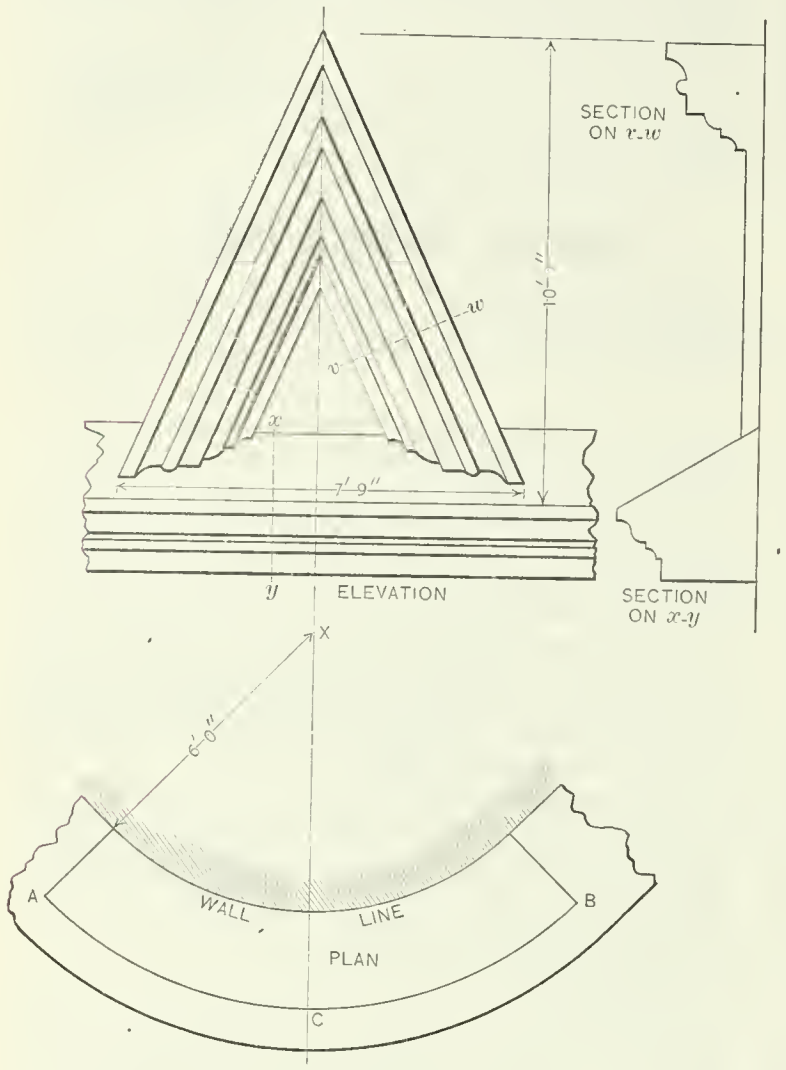


Fig. 1.—Reproduction of Correspondent's Diagram.

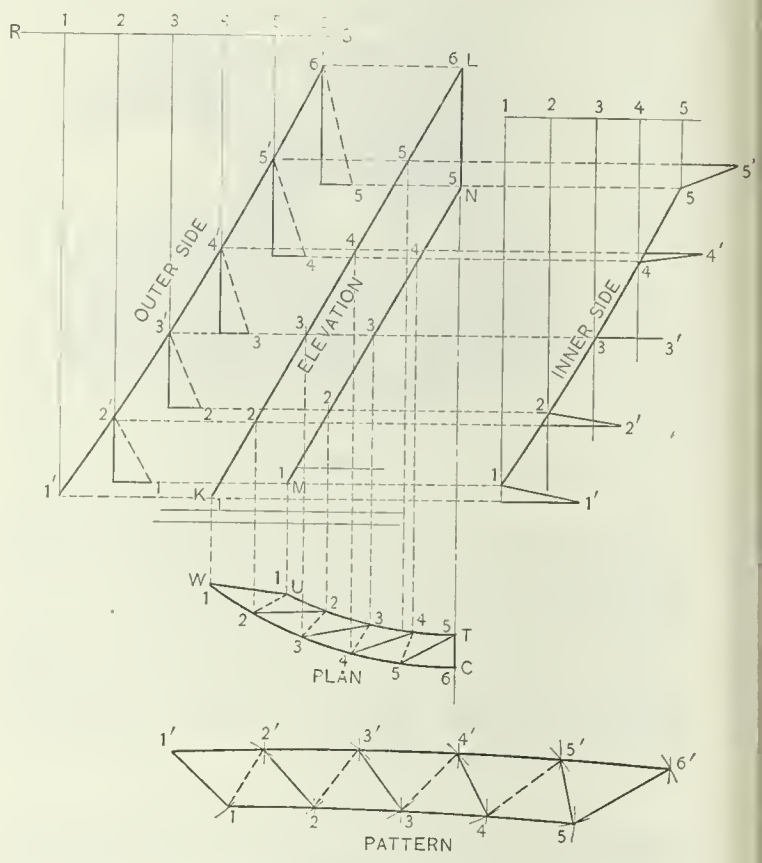


Fig. 3.—Plan and Elevation of Blank for Mold in Fig. 2, with Pattern Obtained by Triangulation.

PEDIMENT MITERING ON WASH.

In order to more thoroughly understand the nature of the forms under consideration it will be well to first enter into a short analysis of the same.

A more perfect idea of the form of the moldings can be obtained by extending them to include not less than a quarter of a circle in plan, thus obtaining, as it were, a whole, of which the mold required is a part. Therefore first extend the wall line B D of the plan in Fig. 2 to E, completing the quarter circle, and from E erect a perpendicular into the elevation indicating one side of the cylinder in that view. Now extend the lines of the pediment moldings in elevation till they cross the outline just drawn, finishing the same as shown at F. To save space the elevation of the extended molding is allowed to cross a portion of the plan, which we hope will cause no confusion. If the elevation as thus completed be considered for the moment to be that of a wall, rectangular in plan, the profile F will then represent that of a level return, and it will be seen that, as is always the case when an inclined mold meets a level on one at the angle of wall, the profile of one of the molds (in this case the level mold at the foot) must be raked in the regular manner, as shown at F, in order to form a miter. Since, however, the wall is cylindrical instead of rectangular, the only conclusion to be drawn is that the pediment mold must, from its crossing with the center line, undergo a gradual change of profile as the sides of the cylinder are approached, where its profile must be as just obtained at F.

In view of this change of profile, the surface of a blank for such a mold becomes variable in flare. The only scientific method, therefore, of arriving at a true pattern of the same is by triangulation. The conditions here, as in many other problems, are, however, such that it is a question how to discriminate between that which is geometrically accurate, involving thereby much labor, and that which, if less accurate, is more expedient, especially in the case of the patterns for blanks for raised molds, where the result depends as much upon the manipulation of the work under the hammer as upon the shape of the blank.

The method of determining the patterns will be governed somewhat by the construction adopted. As the pediment thus partakes of the nature of an arch in a circular wall, what the pattern cutter really requires more than the pattern for the blanks is a correct templet or form to assist him in raising the mold, as with such assistance any approximately correct blank can by proper manipulation be brought to the required form. Since, as above stated, the profile of the mold is different at each point, it will be advisable to adopt such a construction as will bring all the flat surfaces into correct position, and at the same time form an angle or groundwork into or against which the mold can be placed and fastened after raising, and which will at the same time provide a guide or templet in perfecting the curve of the mold during the operation of raising. An enlarged sectional view of the mold, showing a con-

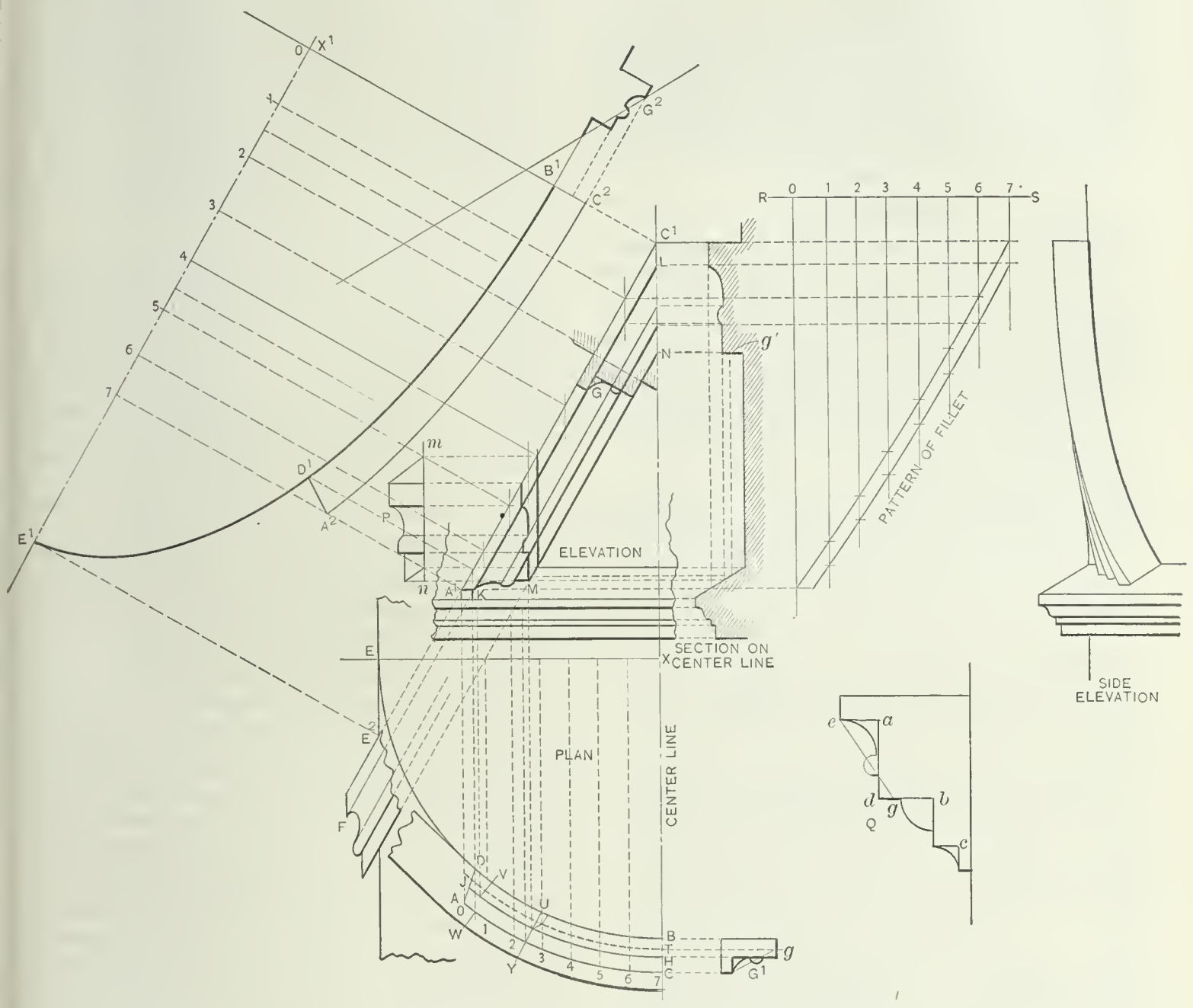


Fig. 2.—Plan, Elevations and Sections, Showing Method of Obtaining Curves of Pediment Molds.

PEDIMENT MITERING ON WASH.

struction based upon this idea, is shown at Q of Fig. 2. The section includes the entire profile as given in Fig. 1, the upper portion only being used in the demonstration. As will be seen by inspection, the flat surfaces—that is, the vertical faces of some of the fillets and the horizontal surfaces or soffits—are extended inward behind the molded forms, meeting and joining at points *a*, *b* and *c*, for which joints perfect miters can be developed. Referring now to the profiles shown at G and G^1 of Fig. 2, it will be seen that the upper fillet of the mold is part of a cylindrical surface whose plan or profile is shown by the line A C and whose radius is X C, while the lower fillet and all that surface shown from *a* to *d* in section Q is part of a cylindrical surface whose plan is the line V H.

To obtain the pattern, therefore, of the upper fillet of the mold, that member must be considered for the time being not as a part of the mold of which G is the profile, but as part of a great cylinder whose profile is A C, mitering against two plane oblique surfaces, one of which is the roof of the pediment, shown by the line A^1 C^1 of the elevation, the other surface being the plane of the soffit K L, corresponding to *e a* of profile Q. Therefore divide the arc A C of the plan into any convenient number of equal spaces and place a stretchout of the same on any line, as R S, drawn at right angles to the sides of the cylinder in elevation. From the several points on A C erect lines cutting the miter lines A^1 C^1 and K L of the elevation, and from the points of intersection with the same carry lines parallel to R S, cutting corresponding lines of the stretchout, thus obtaining the pattern as there shown. The pattern for the surface forming the back of the mold and the fillet below, corresponding to *a d* of profile Q, is obtained in an exactly similar manner, V H being its plan or profile and K L and M N its miter lines.

The patterns for the roof and soffits, these surfaces being as before explained oblique planes intersecting the sides of a cylinder, are composed of elliptical curves, the method of obtaining which is no different from that employed in the problem familiar to all—viz., that of cutting a hole in a sloping roof to fit against a round pipe. The roof A^1 C^1 in this case fills the space between two pipes or cylinders, one of which is shown in profile by the line D B of the plan, and the other by the line A C. Its pattern can be most easily obtained by the usual operation of raking. For this purpose the points on A C used in the former operation may be used again. Intersections from them having been already obtained on A^1 C^1, the roof line in elevation, lines may now be carried from each of these points of intersection at right angles to A^1 C^1, cutting any parallel line as E^1 X^1, forming part of the major axis of the ellipse. Set off from E^1 X^1 on each of the parallel lines just drawn the distance of corresponding points on A C as measured from E X of the plan. A line traced through the points so obtained, as shown from A^2 to C^2, will give the front line of the pattern. The line of the back corresponding to a section of the wall B D may be obtained in exactly the same manner from a series of points assumed on B D of the plan. Project lines, as before from them, first to A^1 C^1, then to E^1 X^1, and set off on the same from E^1 X^1, the distances of points in B D from E X, thus obtaining the line B^1 D^1 and completing the pattern of the roof. In order to more clearly show the nature of the curves of the roof and the line which the molding must follow, the complete quarter ellipse or section on C^1 E^2 of the elevation corresponding to B E of the plan is shown by B^1 D^1 E^2. For the soffit corresponding to *e a* of profile Q, the lines A C and J H of the plan with K L of the elevation are used in the same manner as described in obtaining the pattern of the roof, while J H and B D of the plan with M N of the elevation are used in obtaining the pattern for the soffit corresponding to *d b*.

The patterns for the fillets and soffits having been cut by the methods above given, the joining of their edges insures of itself the cornet profile of those members at the different parts of their course. A templet is thus formed in which all the principal lines of the mold are established, and the filling in, as it were, of the molded portions becomes as much a matter of manipulation as of science.

Since as above stated, triangulation is the only strictly correct method of arriving at a pattern for the blank, the essential points of such an operation will be briefly outlined. The angle of flare for the portion to be raised must first be determined by a line drawn upon the profile at G^1, and the stretchout of such portion be set off on this line. On account of the smallness of profile, G^1, this can be more clearly shown on profile Q, where *e g* shows the angle or assumed profile of the blank, the stretchout of the mold (the cove and bead), extending from *e* to *g*. From the point corresponding to *g* on profile G^1 project a line to the center line at T, and from X as center with X T as radius, draw an arc indefinitely representing the plan of the inner or lower edge of the blank. The projection of point *g* from the wall line may now be set off from the wall line of the sections on the center line, as shown at *g'*, and a line from *g'* first dropped upon the wash of the level cornice, and carried thence horizontally to intersect with M N of the elevation. A line from this intersection dropped into the arc from H of the plan at U, and a similar line dropped from K of the elevation into the arc A C of the plan at W, will complete the plan of the blank.

To avoid a confusion of lines the elevation and plan of the blank with the method of triangulation are shown in Fig. 3, in which corresponding parts bear the same reference letters as in Fig. 2. Divide the both lines of the plan into any convenient number of equal spaces, as shown by the small figures. Since the inner line is the shorter, one less space may be used in it than in the outer. Connect points in C W with those of similar number in T U by solid lines, and with those of next lower number by dotted lines. These several lines crossing the plan will form the bases of a series of right angled triangles, whose hypothenuses when obtained, will give correct distances across the pattern. On account of the arch being curved in plan the elevation does not give the true length of the upper and lower edges of the blank. These distances must, therefore, be obtained by development—viz.: For the outer line of pattern erect lines from the several points assumed in C W of the plan, Fig. 3, cutting K L of the elevation, and upon any horizontal line as R S set off a stretchout of C W and draw the several measuring lines as shown. Horizontal lines from the several points on K L intersecting measuring lines of corresponding number will give the required development. This operation is exactly the same that employed in obtaining the inner line of the pattern of fillet in Fig. 2, the reason for which is obvious, since both lines must be of the same length. Should this operation be conducted upon the drawing shown in Fig. 2, the points originally assumed upon the plan in that view could be used, in which case the spaces upon the line K L as obtained from the plan and given in the pattern of the fillet could be used in the development of the pattern. The line giving the true length of the inner edge of the pattern is obtained in exactly the same manner as shown at the right in Fig. 3.

In constructing the several right angled triangles whose hypothenuses are to give the required measurements across the pattern, their altitudes have been obtained upon the measuring lines of the previous operation by projection from the elevation, as shown. Thus the bases of the triangles at the left are on lines projected from the points on the inner or shorter side of the elevation while their altitudes are determined by the projection of lines from points bearing the next higher number on the outer side of the elevation. The lengths of the bases are equal, respectively, to the lengths of the dotted lines crossing the plan, and the hypothenuses 1 2′, 2 3′, &c., shown dotted, are therefore the true distances across the pattern on lines corresponding to the dotted lines of the plan. The bases of the triangles at the right of the elevation, which are equal in length, respectively, to the solid lines crossing the plan are upon lines projected from points on the outer side of the elevation, while their altitudes are determined by lines from points of the same number on the inner side of the elevation, the hypothenuses 1 1′, 2 2′, &c., being the

correct distances across the pattern on lines corresponding to the solid lines of the plan. The method of constructing the successive triangles forming the pattern from the hypothenuses of the several triangles in conjunction with the spaces in the developments of the two sides is clearly shown in the pattern; the figures bearing primes belonging to the outer side of the pattern, while those of the inner side are without. Being the same as that employed in the final operation of all problems in triangulation, the method requires no further explanation.

On account of the irregularity of the mold, due to its change of profile as explained above, the cutting of a blank by any method is at best but an approximation. If it is desired to employ the method of cutting blanks usually applied to circular molds, to the present or any similar case, the curve, which is elliptical, must first be approximated by an arc of a circle, or perhaps by a combination of arcs, according to its extent. The curve to which the mold in question must be raised is, of course, that obtained at the outer edge of the roof and shown by A^2 C^2 of Fig. 2. The center of an arc which will approximate this curve will be found by experiment to be somewhere on the line C^2 X^1 extended, which may be designated as Z, but is too far from X^1 to be shown in the diagram. To find the length of radius for a blank first place a profile of the mold in correct relation to the oblique projection, as shown at G^2, through which draw the line of flare as previously explained (as shown on profile Q), and extend the line of flare till it meets a line from Z drawn parallel to X^1 E^1. The distance from the point of intersection to the outer point of G^2 will be the length of the desired radius. The distance of point Z from B^1 in the diagram, Fig. 2, is 6⅜ inches, while the length of radius found, as explained, is 13 inches as measured on the diagram, or about 48 feet by the scale of the diagram.

In consideration of the constant change of profile in the mold at each successive point, it may be advisable to construct one or more stays to assist in bringing the blank to its proper form, especially if the mold were in a similar case extended further along toward F than that shown in Fig. 2. As a vertical section of the mold is more easily obtained than one at right angles to the lines of the elevation, and answers the purpose just as well, such a section may be developed as shown at P. Draw a line Y U across the plan at any desired point toward the center X. Divide the curved portions of profiles G and G^1 into corresponding spaces and carry lines from the several points in profile G^1, first horizontally to the center line, then from the center X around the curve, cutting the line Y U of the desired section. From the several points of intersection thus obtained erect lines to the elevation, which intersect with lines from points of corresponding number from profile G drawn parallel to A^1 C^1. Lines connecting the several points of intersection will give the elevation of the desired section or stay. From the several points of intersection so obtained carry lines horizontally, cutting any vertical line as *m n*. Upon each of the horizontal lines set off from *m n* the projection of corresponding points in profile O, as measured from the wall line. Lines traced through the points of intersection will give the desired vertical section of the mold. This operation is not shown in full on account of the smallness of the drawing, but will no doubt be understood.

In the solution of any similar problem it should be noted that the more nearly horizontal the moldings of the pediment are drawn the more nearly will their curve approximate the arc of a circle; and the change of profile being for the same reason less, the more regular in flare will their blanks become, and the more applicable will be the rules governing circular molds. On the contrary, the more nearly vertical the moldings of the pediment are placed the more nearly straight will they become and the less need will there be of applying any rule or method referring to curved molds, as a perfectly straight mold formed to the required profile (as G) in the regular way could easily be brought to the curve by proper hammering.

A New Tin Mining Company.

The organization of a tin mining company to operate in the Black Hills of South Dakota is reported to be in progress in Detroit, Mich. The company will be known as the United States Tin Mining Company and will associate together some prominent men in Michigan and Ohio. A mining journal printed at Deadwood asserts that Elmer J. Miller, Collector of Customs of Columbus, Ohio, and B. R. Noble of Yale, Mich., have purchased the Century and Tin King mines in the South Hills for the new company for $100,000. These mines are great producers, it is claimed. The ore is not of very high grade, but exists in very large, easily worked deposits. The new company will erect steam hoist plants immediately, and put in mills next spring. These mines were originally part of the property developed by the Harney Peak Tin Company, formed by English and American capitalists. The company did some fine business for a time, and then through litigation many of their mining claims were tied up, and relapsed to the Government by time limitation. It is some of these relocated claims that the United States Tin Mining Company have purchased.

FLASHINGS.

THE Sheet mills of the Anchor Rolling Mill plant in Pittsburgh, Pa., now being operated by Neal Brothers of that city, are reported to be in full operation.

THE CARNEGIE SHEET IRON COMPANY of Pittsburgh, Pa., have been incorporated with a capital stock of $1000 by R. G. Gillespie, W. H. Skivington, D. R. Torrance, J. H. Paul and T. R. Ellison. The company propose erecting a Sheet plant at West Carnegie, Pa.

THE HAMPDEN CORNICE WORKS, Springfield, Mass., have the contract for furnishing the large skylights for the new building of James Clifford's Sons at Lenox. They also have the contract for the metal work and slate roofing on the Central street school addition, and a large order for ash chutes for A. A. & S. T. Ball.

F. W. STELLING, Hartford, Conn., has the contract for the metal work on the new Wethersfield avenue school house.

C. G. BRUNNCKOW, Providence, R. I., has the contract for the copper work, including roof, ventilators, &c., on the boiler house for the Rhode Island State House.

C. H. WILLISTON, Fall River, Mass., has the contract for 80 squares of gravel roofing on the new store houses of Cheney Brothers, at South Manchester, Conn.

CUMMINGS BROTHERS, Holyoke, Mass., have the contract for roofing the foundry of the Holyoke Machine Company. They have completed the roofing of the Parsons Paper Company's mill, and are at work on the new mill being erected by M. E. Cummings.

AT a meeting of the Board of Directors of the Parkersburg Iron & Steel Company of Parkersburg, W. Va., held last week in Pittsburgh, it was decided to increase the Sheet plant now under construction for the company, from a four-mill to a six-mill plant.

W. H. GRIFFITHS, who recently sold his interest in the Washington Charcoal Iron & Tin Mills, at Washington, Pa., to McClure & Co. of Pittsburgh, will build a new Tin mill at Washington, to contain either three or four mills.

THE BANFIELD WORKS of the American Tin Plate Company, at Irondale, Ohio, are being practically dismantled, the mills being removed to another works. The wash house and tinning department will be allowed to remain and will be used to coat the plate made in the new Tin Plate plant at Chester, W. Va.

ALAN W. WOOD of the American Sheet Steel Company has returned to Pittsburgh from Europe.

The German puddle mills threaten to go to law about the pig iron contracts made for 1901 delivery with the pig iron syndicate.

Ideal Boilers.

The American Radiator Company, Chicago, have just issued an exceediugly haudsome catalogue which treats of their Ideal line of steam and hot water boilers. This catalogue is in every respect a beautiful specimen of book work. The pages are large, enabling the use of engravings of a brilliant size to clearly bring out the points of the apparatus illustrated. The eugravings are reproductions of photographs and are of the highest staudard of artistic excellence. Red ink is used for titles and catch lines. The book is bound iu heavy paper covers of Capri blue with title printed in ox heart red. The title on the cover is inclosed in a reproduction of the company's four-leaf clover trade-mark. The outline of this device is executed in white by an ingenious method of priuting which imitates the work of a brush, causing it to stand out in bold relief. The cover is further embellished with numerous reprodnctious of the company's monogram iu silver. A blue silk cord is attached to the book to enable it to be easily hung up.

An iutroductory chapter outlines the policy of the company. They state that they do not, under any circustances whatever, furnish estimates of the cost of a heating plant for an owuer, architect or heating contractor, aud do not make piping plans for anybody. It is their aim aud inteut to deal only with those regularly established in the trade. Subsequeut pages are devoted to statements relative to the character of the material used by the company and the nature of the construction of the goods which they turn out.

The boilers which are illustrated in the catalogue comprise the Ideal sectioual 36-inch steam boiler, Ideal sectional 36-inch water boiler, Ideal sectional 24-inch steam boiler, Ideal sectional 18-iuch water boiler, Ideal sectional 12-inch steam boiler, Ideal Premier steam boiler for hard coal, Ideal Premier water boiler for hard coal, Ideal Premier steam boiler for soft coal, Ideal Premier water boiler for soft coal, Ideal Portable steam boiler, Ideal Portable water boiler, Ideal Iuvincible steam boiler, Ideal Inviucible water boiler, Ideal Junior water boiler, Ideal Junior steam boiler and Ideal sectional tank heater.

The liue of boilers presented by this company is unusually compreheusive and is designed to meet every possible requirement. The sectional boilers are intended for use iu large systems where round boilers of the circular fire pot are not made of adequate capacity to carry the required amount of radiation. These sectional boilers are very convenient for installation, as the largest parts may easily be taken through doors or windows. The sections of these boilers are connected with tapered push nipples, which possess decided advantages over the use of headers at the top and sides. The use of these nipples effects a material saving in hight and also secures a liberal steam space above the crown sheet for thorough diseugagement of the steam. All the sectioual boilers are provided with opeuiugs in the frout section for the purpose of introducing a coil of pipe over the fire, enabling water to be heated for cooking and toilet purposes during the season when the heating apparatus is used.

The line of vertical boilers has been increased by the addition of new models, thus making the apparatus offered by the company still more varied and giving the user a greater choice of patterns. In looking over the catalogue the reader will observe that the company have paid much attention to adapting their apparatus to the use of soft coal as well as authracite. This is a feature in the constructiou of heatiug apparatus which is becoming more and more necessary as the use of soft coal for domestic purposes iucreases. Vast sections of the country are far from the deposits of anthracite coal and cannot obtain it except at very high cost, but have abundant supplies of soft coal. The adaptation of high class heating apparatus to the use of soft coal is greatly appreciated in such localities.

The last ten pages of the catalogue are devoted to practical suggestious to the trade. Directions are given how to obstruct chimneys and how to make counections with chimneys to secure best results. Numerous illustrations are presented which couvey a great deal of valuable information on the subject of securing proper draft. Directions are furnished which are intended as a guide in the selection of a boiler which will prove of much value to heating engineers and house owners.

Edwin H. Sedgwick.

Edwin H. Sedgwick, treasurer and general manager of the S. Wilks Mfg. Company, 53 to 55 South Clinton street, Chicago, died in that city on the 10th inst. Mr. Sedgwick was 59 years of age, and was born in Hunter, Dutchess County, N. Y. He removed to Chicago iu 1868 aud was for a time iuterested in the hardware business with Miller Brothers. Subsequently he was engaged in the commission business and afterward operated on the Board of Trade, continuing in that line for 15 years. In 1892, in connection with N. S. Bouton, he purchased the business of the S. Wilks Mfg. Company, which had been established in 1857. For the past nine years he was the manager of the business of this company. His death was the result of a complication of ailmeuts, his illness having continued for over a year. A son, E. W. Sedgwick, succeeds him as manager, and another son, H. M. Sedgwick, is secretary of the company. They are manufacturers of the well-known Wilks water heaters and also of tanks and steam generators for all purposes for which hot water or steam is required.

Steam Fitters' and Plumbers' Supplies.

The F. N. Du Bois Company, Twenty-fifth street and Ninth aveuue, New York, are adding steam fitters' supplies as a uew department to their plumbing supply business. The house have arranged to carry iu stock a complete liue of fittiugs, valves and brass goods, as well as safety valves, pressure regulators, steam traps, pump governors and smaller appliances used in the construction of a modern heating system. The company are also just bringing out two new specialties in plumbing goods; one is a drum trap made with the bottom closed without solderiug, and the brass trap screw, iustead of being soldered in as heretofore, is now spun with the body of the trap, so that the cover makes au air tight fitting against the lead, which is spun over the brass threaded part. The other device is a standard to which an ornamental soap and sponge holder is attached. This standard is made of brass tubing about 1¼ inches in diameter, and stands 4 feet high, finished, with an acorn at the top. The bottom is fitted securely into a floor flange 6 iuches in diameter, with screw holes for fastening to the floor. While this fixture may be called a soap and sponge holder staudard, incidentally it does most importaut service as a support for iuvalids, infirm or elderly persons wheu they step into the bathtub, numerous accidents having occurred from the bathtub being slippery, causing a fall when there was nothing that could be grasped to afford a support.

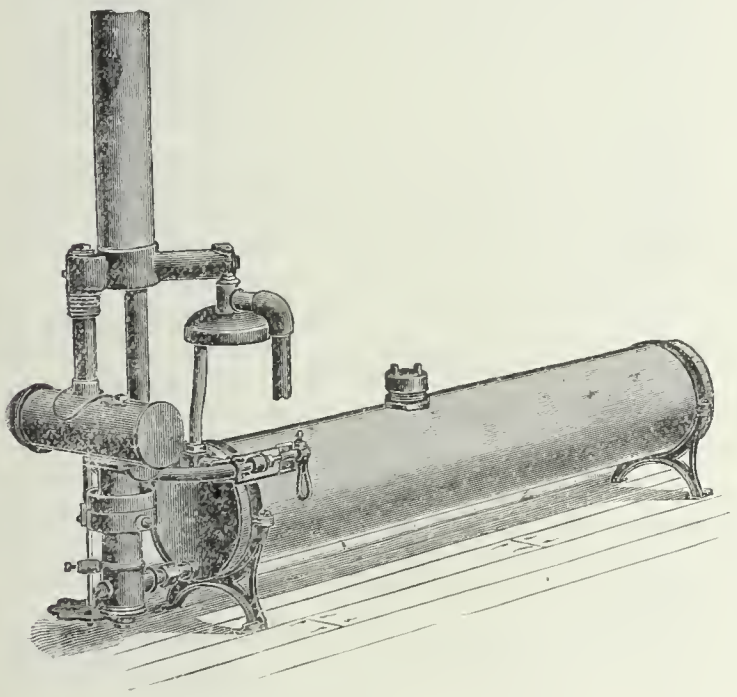
Gasoline Fire Pots and Torches.

The Clayton & Lambert Mfg. Compauy, Detroit, Mich., are issuing an entertaining little pamphlet entitled "Gasoline Fire Pots and Torches," giving the conversatiou of a salesman and a customer about how to purchase such goods. Good illustrations are iuterspersed with the text, the first showiug the entrance of the customer aud the salesman with his liue of samples. The cuts conform with the text. Thus, where strength is mentioned as a feature, the salesman is shown standing on one of the fire pots. Iu connection with the air pump, the various parts are so shown that the explanation is readily understood. The ease with which the top section can be removed is also the subject of a picture. This top section may be used for heating soldering coppers, or the cover may be removed for heating a soldering pot over the burner. When the top is removed the flame is available as a torch, allowing the fire pot to be used for thawing frozen pipes, taking soil pipe apart, melting off brass work from lead pipe, and a variety of other work. The burner swivel and its features are also illustrated and explained. The remainlng pages of the catalogue, 52 in uumber, are devoted to

the company's standard line of fire pots for tinners' and plumbers' use, alcohol torches for gas fitters, torches for painters' use and torches for lighting with gasoline. On the last two pages are shown the parts, which are made interchangeable, so that the appliances can be readily repaired.

Gasoline Gas Lighting Apparatus.

In the accompanying illustration we show an apparatus that is being put on the market by the Incandescent Lighting & Stove Company of Cincinnati, Ohio, designed to generate gas for illnminating purposes from gasoline, and especially adapted for lighting stores, halls, churches or places where a nnmber of lights are used. The machine consists of a tank, generator and a governor, and contains some new featnres, and is claimed to work on a new principle. The generator is connected with the tank by pipes leading from both top and bottom. This is to preserve the same level of gasoline in both parts and to secnre an equal pressure. It is also said to prevent a leakage of gasoline from the needle valve. The gas is generated by means of a flame under the generator, which is controlled in size in accordance with the qnantity of gas used, any reduction of pressure hav-



Gasoline Gas Lighting Apparatus.

ing the effect of increasing the amount generated. In connection with the governor there is a safety escape for any excessive quantity of gas that might be generated under any conditions. It is claimed that the generator can be heated up in less than one minute, and after it is once heated the gas may be turned on to the service pipe throngh the mixing tube, where it takes up 95 per cent. of air before reaching the service pipe. The valves located on this pipe are controlled by the governor, which supplies the flame under the generator. It is pointed out that the best light is obtained from gasoline gas when the gas is delivered to the burners at a uniform pressure, and that the governor provided with this machine maintains a uniform pressure, whether use is made of one light or many. Another feature of the apparatus is the filling can furnished with it. The construction is such that when the tank is filled to the desired extent air is stopped from entering the can, preventing the flow from it, and the valve shnts off the entrance to the tank, so that no air can get into it. It is further pointed out that the construction is exceptionally strong, and that in case of fire bnrning around the apparatus the gas generated would escape through the safety pipe and avoid all possibility of danger of explosion at the point where the apparatus is located.

FRANK I. LESSARD, Springfield, Mass., will do the plumbing and the Whitcomb Stove Company the heating in the new house for F. W. Lathrop.

FIRE HAZARDS OF HEATING SYSTEMS.

The great diversity of devices and methods in use for honse warming, due to the varying conditions of fuel supply and climatic requirements, says *Insurance Engineering*, presents to the underwriter a range of fire hazards which compels the careful study of all the conditions to enable him to snggest to the nser the proper safeguards to prevent disaster.

The surveyor or inspector finds his attention called to problems ranging from the old fashioned open fire place, with wood for fuel, such as grace and make cheerfnl our country homes, to the wood or coal burning stove, and up to the more modern and complicated steam, hot water and hot air furnaces, now so common in the eqnipment of city and town houses, with a sprinkling of natnral gas grates or stoves, and an occasional encounter with the kerosene oil device, each demanding special expert knowledge as to constrnction and use, and the exercise of good jndgment in the snggestions necessary to make safe snch defects as may be discovered upon investigation.

Statistics of fire losses from heating appliances seem to place stoves and stove pipes at the head of the list, followed closely by hot air and indirect steam heating devices; then in regular order, open fires, wood and coal, hot water and direct steam heat; oil stoves, and last, natural gas. Considering the record of fires from heating apparatns as a whole, the only conclnsion to be reached is that carelessness is at the base of each of these accidents, either as a defect in the original installation of the apparatus, or as the result of recklessness and the neglect in its after use and care. With a desire to consider briefly some of the salient points of hazard incident to the methods of house warming, we take up the different devices in the sequence of the statistical record as above noted.

Stoves and Stove Pipes.—Where such devices are to be used for heating or cooking, they should be free from cracks or other imperfections which would admit of the escape of coals or sparks; should be set upon solid platforms of brick, or in metal pans with raised sides and legs 3 inches in hight, in either case being large enough to extend well in front of the ash pit and thus protect the floor. Stoves should not be set within 18 inches nor their pipes within 10 inches of any wood work, lath or plaster partition or other combustible material, except when conditions will not permit otherwise, and then all combustible material should be protected with bright tin sheeting, with a space of not less than ½ inch between it and the combustible.

Stove pipes shonld be well and frequently supported by wire; each joint should overlap the other toward the stove and be carefully riveted to prevent the escape of sparks. Fires should not be dumped into the ash pit except upon a bed of dead ashes of not less than 2 inches thickness. All pipes shonld enter the chimney or flue horizontally and in plain sight. Pipes entering flues vertically, or passing throngh blind or unnsed attics, where they may not be frequently inspected, are prolific canses of fires, particularly in country houses.

Hot Air and Indirect Steam Heating.—The furnace should be set upon a very solid foundation in order to prevent the sagging or cracking of its walls. The top or dome of the enveloping walls should not be less than 18 inches from the unprotected wood work or lath and plaster ceilings, and its smoke pipe or flue should be a like distance from combustibles. The ash pit should be sunken, or the floor in front of it be of brick, stone or concrete, not less than 36 inches wide. The inclosing walls of the furnace should not be less than 12 inches from all combustible material, and the inlet or cold air dnct should be entirely of iron or other metal.

Hot air flues or condnits should be made of heavy, bright tin plates with well soldered lock seams, and be kept at least 10 inches from all wood work or other combnstibles. Where it is necessary to carry them through or into wooden or lath and plaster partitions, the flues should be double—*i. e.*, one inside of the other, with an air space of not less than ½ inch between the two, and be properly braced to insure rigid separation throughout. Where register boxes are set in floors or

partitions, the wood work should be framed around them to leave an air space of not less thau 2½ inches, and be protected by flashings of bright tin extending from the outer edge of the register opening to and through the floor beams or partition. Each register should be set in a frame of soap stone not less than 2½ inches wide, and 1 inch thick, firmly and well set in cement or plaster of paris.

At least oue of the registers of the system should be so arrauged as to insure its being constantly open, either by the removal of the vanes of the valve, or by wiring the same open, so that closing would be impossible. Heater fire pots should be carefully examined before use each season, to discover and remedy defects due to the burning out of their walls or the destruction of the luting at the joints of the same, whereby coals might fall into the surrounding air space and ignite dust or other combustibles which are liable to accumulate therein.

Hot Water ond Direct Steam Heating.—The samc general care in setting and arrangement should be followed as suggested under the item on hot air and indirect steam heating devices, and in addition all pipes used for the conveyance of hot water or steam should be kept free from contact with wood work or other combustibles by the use of metal thimbles or sleeves, provided with interior lugs or radial points, to provide an air space where the pipes pass through floors or partitions. Fires from hot water systems occur from the high temperature reached by the water on account of obstructions or retardation of circulation in the pipe system, whereby the heat generated is sufficient to cause the ignition of the wood or other combustible material already partially carbonized by long continued high temperatures. Similar dangers attend the use of direct steam heat, and are augmented by the possibility of the superheatiug of the steam in the boiler, owing to low water.

Oil Stoves.—The fire record of these devices is largely out of proportion to the number in use for heating purposes, and the only practical method of eliminating the hazard of their presence appears to be that of entire prohibition, as even under the most favorable conditions of use they have proven extremely dangerous.

Natural Gas.—Heating by this means is restricted to limited areas of the country, and when the supply is sufficient to insure a full supply at constant pressure, the hazards of its use are quite mild, provided the piping has been properly installed and has passed a rigid test for leaks, and the flues for carrying off the products of combustion have been constructed for the purpose. When, however, the supply is weak and restricted, and the consequent pressure variable, the hazard of its use is vastly augmented, for with low pressure and small supply the user is inclined to open the valve in the supply pipe to its fuliest extent in order to secure a good blaze; and when, later, the pressure is increased from any cause, the small blaze is turned into one of great intensity and power, and is liable to ignite combustibles at a distance.

The only practical means of reducing this hazard lies in the use of an automatic high and low pressure regulating valve in the main supply pipe whereby the flow of gas will be automatically cut off when the pressure either rises above or falls materially below normal, at which it is set to act. Such controlling devices are open to purchase in the districts where natural gas is a factor, and the use of the same should be made obligatory.

New York City Notes.

No new work of importance was given out this week, but every one is busy on old contracts. Journeymen are nearly all busy; consequently the troubles between the factions are overlooked and Amalgamated and Brotherhood men are working together in many shops without friction.

* * *

Manhattan Branch adjourned its regular meeting after passing resolutions in honor of the late President McKinley.

President Isaac J. Brown of the Greater New York Association has had trouble with the muscles of his knee, but his many friends are glad to see him out again.

* * *

Considerable trouble has been experienced by the Law Committee of Manhattan Branch. In some cases which have prosecuted liceused plumbers have come forward and assumed responsibility for work done by uulicensed plumbers, thus procuring the discharge of the defendant.

Heating and Plumbing Notes.

John Carney of New York City has been at Salisbury, Coun., for the past five weeks superintending for his father, M. Carney, at Philmont, N. Y., the installation of a steam heating plant at St. Austin's School. Three thousaud feet of American Radiators were used, about half of the direct-indirect type, in the school, and the balance, of the direct type, in the dormitory. A Capitol Boiler was used for the work.

The New Home Furnace Company, Norwalk, Conn., are sending to the trade a little booklet devoted to the New Home Steam and Hot Water Heaters. These Heaters are of the vertical sectional return flue type. They are made with grates from 24 to 32 inches in width and 13 differeut sizes, rated to carry from 450 to 2700 square feet of direct steam radiation. The boilers are said to have stood the test of four years of actual service.

S. E. Dibble, New Haven, Conn., is plumbing the residence of Benjamin Keller and installing a Hub Hot Air Furnace in this house, and also in two houses for T. J. Crogan, and two Hub Furnaces in the house of Miss B. Cassion.

C. S. Eames, Bridgeport, Conn., has just completed the iustallation of Advance Hot Water Boilers, made by the Pierce, Butler & Pierce Mfg. Company, Syracuse, N. Y., in the residence of C. H. Sanford. He has also used their Perfect Hot Water Heaters in the residences of E. L. Graves anu Julius Pfau, where he is also doing the plumbing. He is also engaged on plumbing and heating contracts at Fairfield and Noroton, and has recently completed the plumbing and heating of a big couutry house on Long Island.

Edward Mahl, Hartford, Conn., has the plumbing contract and Libby & Blinn the heating contract for the new Wethersfield Avenue School House.

Libby & Blinn, Hartford, Conn., are installing a Mercer Boiler, made by the H. B. Smith Company of Westfield, Mass., in the residence of E. S. Goodrich.

The Abendroth & Root Mfg. Company of Brooklyn, N. Y., have purchased the plaut of the Wright Engine Company, at Newburg, N. Y., and will equip the building as a complete modern foundry.

The show windows of the American Radiator Company's salesroom in New York were filled with an appropriate display of flags and crape this week as a tribute to the dead Presideut.

Fred. Fox, Jr., Chattanooga, Tenn., has been made a member of the Executive Committee of the Natioual Association of Master Plumbers by President E. D. Hornbrook, owing to ill health preventing George W. Walther of Baltimore from serving. Mr. Walther was appoiuted at the Kansas City Convention.

Menzies & Menzies, New Haven, Conn., have recently finished the plumbing in a fine residence for Abner Hendee, usiug Mott's Silent Closets, with patent floor connections. They also have the contract for plumbing Charles J. Rice's new house, and have just commenced the installation of the plumbing and steaming system in the Keut laboratory at Yale.

T. Oakes & Son, Hartford, Conn., have the contract for plumbing the Farmiugton Country Club and are overhauling the plumbing in the residence of J. Lampson, and will place new shower baths aud lavatories in the gymnasium at Trinity College. They also have the

contract for furnishing the Chandeliers for a number of fine residences and apartment blocks.

THE HOLYOKE LEAD PIPE COMPANY of Holyoke, Mass, are reported by the New Haven, Conn., *Record* as having been sold by J. H. Bolt to M. H. Baker for $20,000.

T. J. LYNCH, Holyoke, Mass., has the contract for plumbing the new block which T. J. Moriarty is building.

THE CHATTANOOGA PIPE & FOUNDRY COMPANY, Chattanooga, Tenn., recently filled an order for 100 tons of Soil Pipe and Fittings for the municipal government of Guadalajara, Mexico.

W. A. T. SMITH, New Haven, Conn., is putting Kelsey Warm Air Generators in the residences of Dr. Fred. Sumner Smith at Chester, Conn.; Miss M. E. Scranton and Dr. F. B. Ferguson, New Haven.

THE BARLOW BROTHERS COMPANY, Waterbury, Conn., have recently completed a new heating system in the stable of H. L. Wade. They are also installing a hot water heating system in the residence of David Porter and a heating system in the new Library Building.

BIDS will be received until October 4 by the Supervising Architect at Washington, D. C., for rearranging the steam boilers in the United States Court House, Custom House and Post Office Building at Omaha, Neb.

EDWARD B. LYNCH of the plumbing firm of Lynch & Richardson, died at his home, in Littleton, N. H., on September 13.

AT PITTSBURGH James W. Arrott filed a bill in equity in the United States Circuit Court against the Standard Sanitary Mfg. Company, a corporation of New Jersey, doing business in Allegheny. Arrott claims an infringement of a patent for an improvement in dredges for pulverulent material. An injunction and accounting are asked for.

New Firms and Changes.

THE WATER HEATING MFG. COMPANY of Milwaukee, Wis., have been incorporated with a capital of $55,000 by Emanuel Detweiler, Charles Scholl and H. J. Mathews.

M. RYAN, formerly of Williamsport, Pa., has opened a plumbing establishment in Pittsburgh.

THE MANSFIELD PLUMBING COMPANY, 231 Washington street, Passaic, N. J., have been incorporated, with a capital stock of $20,000, of which $7600 is paid in.

The Weary Drummer.

We have received the following verses from a gentleman prominent in the trade, who encountered them in the course of his summer outing. They will be appreciated by many a "Knight of the Grip" as well as by the trade:

The hotel "bus" from the midnight train
Brought only one passenger through the rain.
A traveling man—tired, weary and sad;
For he had toiled all day and trade was bad.

Not a single order on his book,
The disgust he felt showed in his look;
With a careless hand he wrote his name
On a page of the book unknown to fame.

The drowsy clerk the signature scanned,
Then a letter placed in the drummer's hand.
See how he starts, while a smile of delight
Comes over his face at the welcome sight.

Thus clouds of despair will ever appear
To the traveling man sometimes in the year,
Are often dispelled by such simple means
As one friendly letter—how queer it seems.

So wives, sweethearts, mothers and chums,
If you know where we'll be when Sunday comes,
Write to us there if time will permit,
Draw on us at sight and we will remit.

The organization is reported of a company in St. Louis, Mo., who propose establishing a permanent exposition of manufactured products in that city. A seven-story building, 100 x 150 feet, to be erected in the business center of St. Louis, will contain about 150,000 square feet of space, to be sold to manufacturers who desire to place their products on exhibition. It is intended to have the building complete and ready for opening by July 1 next year.

The Steel Strike Settled.

The strike in the sheet, hoop and tin plate mills in the Central West, which has been in force since July 13, has been settled on terms dictated by the United States Steel Corporation, and at a serious cost to the Amalgamated Association. It became evident soon after the strike had been started that President Shaffer and the Executive Committee of the Amalgamated had made a serious mistake in going into a fight, and had the strike lasted two or three weeks longer not a single mill owned by any of the constituent companies of the United States Steel Corporation would have been union, but on the contrary, all would have been nonunion, and the United States Steel Corporation would probably never again have had any dealings with the Amalgamated Association. By the terms of the settlement the Amalgamated Association has lost some valuable mills and a large number of its members. It is doubtful if the association will ever again be as strong as it was before the strike started. It has practically no following whatever in the sheet mills of the American Sheet Steel Company, is recognized only in one works of National Steel Company and in only six mills of the American Steel Hoop Company, has no hold whatever on the tube mills of the National Tube Company and has lost five or six of the larger tin plate mills, where formerly the scale was signed for all but one mill. In addition the Bay View and Joliet mills of the Federal Steel Company, for which the Amalgamated scale has been signed for years, will be started up nonunion and the men will have to return to work as individuals. Whether the Amalgamated Association can continue to exist with so few members and such a small following among the mills is a question. The association has been unfortunate in having a man for its president who was weak and too easily led by members who did not understand the true situation. The Amalgamated Association is badly torn by internal dissensions, and it will take a long time to heal the breaches which have been created since the strike started and in the manner in which it has been settled.

The idle mills of the American Sheet Steel Company, the American Tin Plate Company, National Steel Company and the American Steel Hoop Company are rapidly getting started, and before this month is out it is probable that all the mills of the constituent companies of the United States Steel Corporation that are in shape to run will be in full operation. Preparations are being made to start the Wood mills at McKeesport on Monday. President Shaffer has not yet given out his promised statement as to the terms under which the strike was settled, but claims that he has notified the lodges. There is a good deal of feeling against Shaffer, and it would seem his position is in jeopardy. The National Tube Works, at McKeesport, are in full operation, but affairs at the Riverside plant in Wheeling are still unsettled.

THE TIN PLATE MILLS.

Before the strike was declared the Amalgamated Association scale was signed by the American Tin Plate Company for all their mills with the single exception of the Monessen works at Monessen, Pa. In the two months that the strike was carried on the managers of some of the works of the American Tin Plate Company were very active and succeeded in starting not less than half a dozen mills. These works in the future will be operated nonunion and are as follows: Monongahela, Star and Demmler works, at Pittsburgh, Banfield works, at Irondale; Crescent works, at Cleveland. In addition, the Monessen works, at Monessen, continue nonunion, making six of the larger tin mills that will not sign the scale in the future.

THE SHEET MILLS.

The Amalgamated Association has practically lost its hold entirely in the sheet mills of the American Sheet

Steel Company. The following is a list of the union plants of the American Sheet Steel Company, with the number of mills in each:

Union Sheet Mills.

	Mills.		Mills.
Ætna-Standard Works....	23	Dresden Works.....	4
Cambridge Works.....	7	Falcon Works.....	4
New Philadelphia Works..	8	Piqua Works.....	4
Midland Works.....	6	Struthers Works.....	5
Canton Works.....	6		
Dennison Works.....	4	Total.....	71

The following works are nonunion, there being included eight mills in the Vandergrift equipment which are nearing completion, and are expected to be in operation shortly:

Nonunion Sheet Mills.

	Mills.		Mills.
Vandergrift Works.....	29	Wellsville Works.....	8
Apollo Works.....	6	Canal Dover Works.....	9
Hyde Park Works.....	5	Scottdale Works.....	8
Saltsburg Works.....	4	Old Meadow Works.....	9
Leechburg Works.....	10		
Dewees Wood Works.....	11	Total.....	96

It is probable that most of these small mills, notably those at Canton, Dennison, Dresden and one or two other places, will be dismantled and removed to the Kiskiminetas Valley. At the Hotel Lincoln conference in Pittsburgh, on July 13, Persifor F. Smith, acting for the American Sheet Steel Company, offered to sign the scale for the W. Dewees Wood, Wellsville, Old Meadow and Saltsburg mills, and also for all other sheet mills for which the scale had been signed before. This will give an idea the losses the Amalgamated Association have sustained in the sheet mills.

THE TUBE MILLS.

The Riverside works of the National Tube Company at Wheeling and Benwood, W. Va., will, it is stated, resume operations on Monday. These works will be the last of the plants of the National Tube Company thrown idle by the strike to start. The Riverside works are among the largest and most modern of the company. All of the Pittsburgh works of the National Tube Company resumed operation on Thursday evening, after idleness in honor to President McKinley's memory. At McKeesport, the same evening, all of the 12-lap weld and the six-butt weld furnaces of the National Tube Works started in full.

THE STEEL MILLS.

The Amalgamated has lost all the mills of the National Steel Company for which the scale had formerly been signed, except the Mingo Junction works, at Mingo Junction, Ohio. While it is not generally known, yet it is a fact that when the Shenango Valley works, at New Castle, starts up this week, it will be as a nonunion mill and the men will have to return to work as individuals. The nonunion mills of the National Steel Company, where organized labor is not recognized in any way, are as follows: The Ohio works, at Youngstown; the Shenango Valley, at New Castle; King, Gilbert and Warner works, at Columbus; Bellaire works, at Bellaire, and Buhl works, at Sharon. In addition the Joliet and Bay View mills of the Federal Steel Company will, in the future, be nonunion. From the above it will be seen that the Amalgamated has sustained some serious losses, and with the internal dissensions that exist in its ranks the association is in a very perilous condition.

THE CONFERENCE.

The conference at New York on Saturday, September 14, at which the strike was declared off, was between the officials of the Amalgamated Association and the three constituent companies of the United States Steel Corporation, these being American Tin Plate Company, American Sheet Steel Company and American Steel Hoop Company. The National Steel Company, or the National Tube Company, were not represented in the conference and no action was taken as to their mills. C. M. Schwab, president of the United States Steel Corporation, was not present at any of the conferences, the settlement of the strike being left entirely to the officials of the three constituent companies named above.

A very important feature in connection with the settlement of the scale is that in the agreement made between the Amalgamated Association and the American Sheet Steel, the American Steel Hoop and the American Tin Plate Company, the scale will hereafter be recognized as a contract between the Amalgamated Association and the three concerns named above, and this will prevent the Amalgamated Association from breaking faith with all the concerns, should trouble arise with any one of them in the settlement of the scale in the future. It was the desire on the part of the officials of the constituent companies of the United States Steel Corporation to prevent a repetition of the contract breaking done this year by the Amalgamated Association when it shut down the mills of the American Tin Plate Company, the Federal Steel Company and the National Steel Company because of a dispute in the settlement of the scale for the hoop and sheet mills. There will be no chance for contract breaking in the future, as under the terms of the agreements made contracts have been drawn and recognized as such by both sides. While the strike has been officially declared off by President Shaffer, he had not, up to Monday evening, furnished the men with a statement of the conditions surrounding the settlement of the strike and many of the men were at a loss to know whether to return to work or not. There is a bitter feeling against President Shaffer and other officials of the Amalgamated Association, and some startling changes in its officers before long are very probable. The men who went out on a sympathy strike and who are members of the American Federation of Labor have lost one to two months' work and will not get any strike benefits. In addition, many of them will lose their positions. It will probably be a week or ten days before all the idle mills get started, but it is the intention to put the mills in operation as fast as possible. It is probable that most of the tin plate mills, also the New Castle and Bellaire works of the National Steel Company and the Bay View and Joliet works of the Federal Steel Company, will be started this week.

THE CONTINUOUS SCALE.

We understand that there was brought up for consideration at the conference the question of adopting a continuous scale and that the representatives of the Amalgamated Association expressed themselves in favor of the adoption of some well matured scheme which shall avoid the recurrence of the danger of annual contests. No such proposal was actually adopted, the scale being signed for the current scale year.

It is probable, however, that there will be embodied in future agreements a clause which shall require either side to give three months' notice of the termination of the agreement, and that work shall continue undisturbed during that period, which is to be employed in arranging terms for a settlement.

So far as the Amalgamated Association is concerned such a continuous scale would put an end to the annual mass meeting, which is so expensive and cumbersome.

TRADE NOTES.

A CHARTER has been granted to the Consolidated Mfg. Company of Pittsburgh, Pa., with a capital stock of $250,000. The company propose to manufacture Steel Novelties, including Curtain Hangers, Plating Material and a patent Bottle Stopper. J. H. Skelly is president of the concern, I Leonard Aronson, vice-president; W. H. Sykes, treasurer, and B. H. Petter, secretary. It is stated that the new company will give employment to several hundred hands.

THE FOOT WARMER & HEATER COMPANY of 451 Farnsworth street, Bordentown, N. J., have been incorporated with a capital of $100,000 to manufacture Foot Warmers. William J. Robinson, Charles H. Whittaker and Christopher G. Boland are the incorporators.

CHARLES F. BROOKER, president of the American Brass Company, has returned from an extended European trip.

RALPH B. MONTGOMERY, formerly private secretary to Charles M. Schwab, president of the United States Steel Corporation, is now representing H. W. Johns Mfg. Company, in Pittsburgh, with offices at 220 First avenue, in that city.

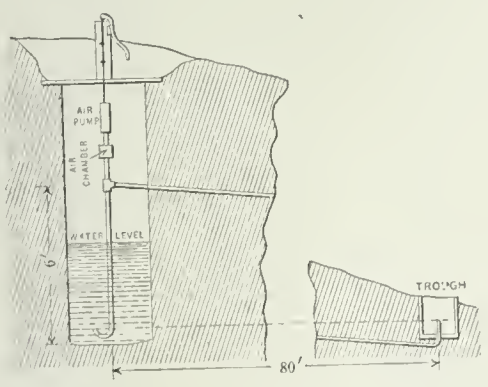
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

APPARATUS UNNECESSARY TO SIPHON.

From I. Z. T., Hawley, Conn.—I have read the article in *The Metal Worker* of August 24, entitled "Will a Siphon Work?" I had been aware that water contained air, but did not expect that sufficient air would gradually separate and lodge in the neck of a Siphon to choke the passage of water. If the movement of water through a siphon becomes more speedy in its course than the natural speed of air moving upward in water, it would seem that the preponderating force of water would keep both moving toward the discharge. With a slower flow the effect may be different. I have planted in a well a siphon made of ¾-inch galvanized iron pipe to be used for watering stock. The foundation frame will not admit of a swift flow, but I hope to arrange to have a siphon operate several weeks or months successfully without attention. The diagram given herewith shows the siphon and details which I propose constructing. It will be noticed that both ends of the siphon are turned upward and terminate at the same horizontal level. This is to prevent the water from leaving the siphon, even if the well becomes exhausted, and also the air will not pass downward through 2 or 3 inches of water to enter and choke the siphon. The supply and discharge ends of the siphon are about 80 feet apart and the short leg of the siphon is about 6 feet long. I have arranged for an air pump or valve, very small in size and well made, to exhaust the air from the top of the siphon should it accumulate. It is fitted so tight that it will not allow air to leak into the air chamber when the pump is out of use. It is made also to detach if necessary for repairs. The air chamber should be made of copper of a large size so that it will store an accumulation of air from the long service and permit an unobstructed flow. It would be



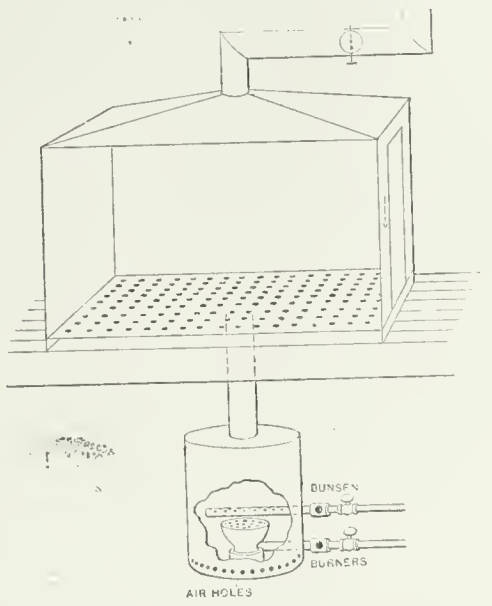
Apparatus Unnecessary to Siphon.

cheaper, however, if a smaller sized air chamber were used. The soil between the well and the watering trough is of such a nature that a pipe cannot be readily sunk so that the water could run by gravity and the siphon be avoided. I should be glad to have your opinion as to the advisability of the arrangement which I propose.

Note.—If the level of the water in the trough is the same as that of the surface of the water in the well the siphon cannot be relied upon for transferring water from the well to the trough. There must be a fall of a few feet in the long leg of the siphon in order to enable it to operate. While a siphon made of iron pipe will operate, the numerous joints that will be necessary and the character of the metal will permit air to enter more freely than through a lead pipe, which is better for the purpose. The air pump and chamber are unnecessary to the operation—particularly the pump. All that would be necessary is a stop cock on the pipe connecting at the top of the siphon, and a pipe running from the upper side of this stop cock to the surface of the ground, terminating in a funnel. Then if any air accumulates, to the extent of interfering with the operation of the siphon, it is only necessary to fill the funnel and pipe with water when the stop cock can be opened and the air will rise and the water flow in to fill its place. The accumulation of air can be detected by the slow flow of the water through the siphon as it accumulates.

TROUBLE WITH DRYING OVENS.

From W. K., New York.—In order to help "D. & K." out of the difficulty reported with their drying oven in *The Metal Worker* of August 31, I submit herewith a sketch which, I think, shows the best way for them to arrange their drying apparatus. From my experience



Trouble with Drying Ovens.

with ovens heated by gas and all kinds of ovens, I find the arrangement shown to be the best, and for dry heat it cannot be beaten. When gas is used there is no coal, no ashes and no dirt, and the drying is done cleanly and quickly. Two burners are shown in the sketch; one, a round one, placed in the center of the air heater and the other, a pipe burner, passing around its sides, both working on the Bunsen principle. The heater should have a tight bottom and be provided with a door so that the burners can be readily got at for cleaning or repairing in case of necessity. There should be as many ½-inch holes as can be got in around the bottom of the heater, 1 inch above the bottom, and the number and size of the holes should be increased with the size of the heater and the work to be done. A thermometer can be put at either end of the oven if desired.

From C. J. M., Paterson, N. J.—Having read the trouble reported by "D. & K." in *The Metal Worker* of August 31 with their drying oven, I would say that there should be no surprise that satisfactory drying was not accomplished when they kept the air in circulation. The use of a heater and hot air for drying purposes is to carry off the moisture from the material to be dried. When the air is heated it increases its capacity for absorbing moisture, and when it passes over the wet material the moisture from it is absorbed and taken away. In consequence, instead of the air being returned to the heater with the moisture it has absorbed, the air should be discharged with this moisture. This is the principle which underlies all successful drying apparatus. "D. & K." will have much better success if they increase the size of the hot air pipe leading into the oven and put a still larger pipe at the top of their drying oven to allow the air to pass away. The placing of a damper in the outlet pipe to govern the flow of air somewhat will be found beneficial.

NEW TIN ROOF OVER OLD ONE.

From W. & S., Middleville, N. Y.—In looking over *The Metal Worker* of September 14 we notice the inquiry of our Michigan friend in regard to laying a new tin roof over an old one. In reply we would say our experience has been that it is a very bad practice. One roof in particular which we put on this way, using a very good quality of plate and painted on the under side, lasted but a little over a year. We think the tendeney to collect and hold moisture between the sheets caused the trouble.

From C. L. T., Trenton, N. J.—Having seen the inquiry of "W. & Y.," in *The Metal Worker* of September 14th, in reference to laying a new tin roof over an old one, I would say that if the old tin roof is put on with a flat seam and the sheathing under it is good, there is no reason why the new tin should not be laid over it without painting on the under side, provided a good, heavily coated plate is used. However, there is no pleasure in doing this kind of work. Our shop has put on one roof under such conditions, and while there has never been any trouble with it, it took more time to put it on than if it had been put on the bare sheathing boards. We first went all over the old roof with a heavy mallet and flattened down smooth any points that rose above the general level. We soon found in nailing the tin on the roof that stouter nails than are ordinarily used were necessary. If the old roof is reasonably tight and no steam or moisture can get at the inside of the new tin, there will be no danger of rust. If there is a possibility of moisture rising, a good rosin sized paper should be used under the new tin. The old roof which we recovered was put on with a flat seam, as was also the new roof. If there is a probability of the new roof being walked on it will be far better to use paper between the two roofs.

From J. S. C., Goldsboro, N. C.—In reply to the inquiry of "W. & Y." in *The Metal Worker* of September 14 as to whether a new tin roof should be laid over an old one, I would say that it should not be done under any circumstances. It will cause a sweating between the two that will eat out the new roof in a few years. We have had experience along these lines.

DURABILITY OF WIRE AND CUT NAILS.

From S. T. T., Adams, N. Y.—I notice in *The Metal Worker* of August 24 an interesting article in relation to the durability of wire and cut nails. In selling nails to carpenters and builders and even to farmers this matter often comes up for discussion among them. The consensus of opinion seems to be largely in favor of the durability of the cut nail for shingling and for other purposes where the nail is liable to rust, a few customers utterly repudiating the wire nail. Is it not a fact that the cut nails of to-day made of steel are quite as susceptible to the action of moisture as the steel wire nail? There is little reason to doubt that the old fashioned iron nail was an improvement in this respect over the steel nail, but is the cut nail of to-day made of steel by some of the various processes now known to the manufacturers any more durable than the wire nail? If any of your readers have made thorough investigation upon this point I am sure their experience would be appreciated by others.

Answer.—Rolling plate for cut nails forms a scale on both sides of the metal. Observation has shown, we are advised, that a coat of rust first forms on the rolled sides of iron cut nails. This deposit of rust, however, can be knocked off, bringing some of the metal with it, leaving a smooth surface. After being in use for years rust attacks the cut sides of the nail and eats it away until it becomes thin along its entire length. On the other hand, rust is said to attack first the cut sides of a steel cut nail, and the result is a honey combing of the nail. The deterioration of steel cut nails is thus much more rapid than that of iron cut nails. With steel wire nails the process of annealing the metal before the wire is drawn removes all scale and leaves the metal, so to speak, raw. This is referred to as giving rust a chance to attack the steel wire nail more quickly than the steel cut nail.

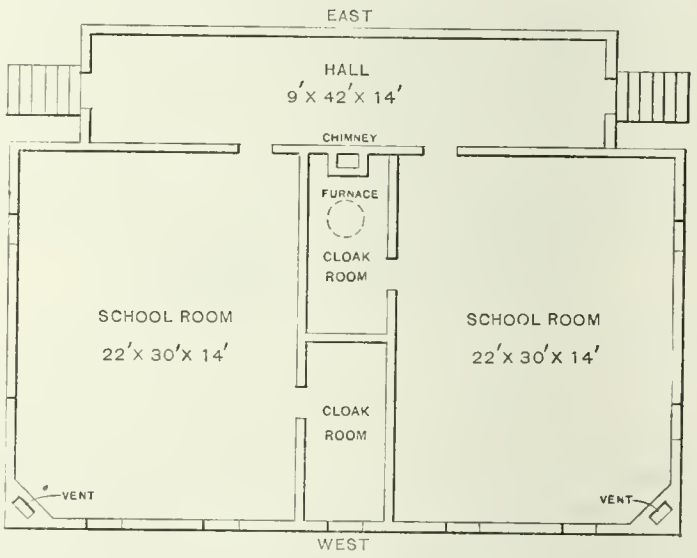
WHY WAS LEAD PIPE DESTROYED?

From S. & M., Piedmont, W. Va.—We send you inclosed a small piece of lead pipe that was put in the ground 3 feet from the surface four years ago. This particular pipe was buried in a filling composed of coal ashes and coal cinders, and was put in to replace a galvanized iron pipe that had been eaten through in a year by the action of chemicals evolving from the cinder pile, which according to our understanding was either sulphurous or sulphuric acid, and which lead pipe is supposed to withstand. We are, therefore, nonplussed to find this lead pipe literally eaten up wherever it goes inside the lot running to the house. But the most singular part of it is that outside the fence, along the street, where there is a filling composed entirely of cinders, the lead pipe main, of which this is a branch, is perfectly sound and good, and it does not show any erosion whatever, while the one from which this is taken is eaten up and full of holes. What combination of acids or alkalies would have this effect on lead pipe is what we would like to know. For your information we would further state that this pipe goes to supply a boarding house, and it may be possible that the chambermaids have for years been throwing slops over the ground. The solution may be in the fact that some of these slops containing urine, in combination with the sulphuric acid, which is undoubtedly in the cinders and ashes, has caused it. We can find no one here who can tells us this, so ask your assistance.

Answer.—The chemicals acting upon the lead pipe appear to be acetic acid and carbonic acid gas, both of which will combine with the lead, forming what is known as white lead. The acetic acid or other vegetable acids will attack the lead, and the carbonic acid generated by the fermentation of the garbage will finish the destruction of the lead or any other pipe ordinarily used for service pipe. To preserve the pipe cover it with asphalt applied hot or with hydraulic cement thick enough to keep the pipe free from seepage water.

FURNACE QUESTIONS ON SCHOOL HOUSE HEATING.

From J. M., Arkansas.—Will *The Metal Worker* kindly inform me the best way to heat four rooms and the hall of a school house, a plan of which is presented here-



Furnace Questions on School Heating.

with? It is the intention that a large hot air furnace shall be used. What would be the proper size of the heat stacks for the second floor and the hot air pipes for the first floor, and what sized registers should be used on both floors? Where would be the proper place to locate them, and where would be the best place to take the cold air from?

Note.—Our readers who have had experience in school house heating are invited to lend their assistance to this correspondent. Meanwhile we would suggest that the book, "Furnace Heating," which can be furnished by our book department, and which has a chapter devoted to school house heating, will give our correspondent valuable information on the subject.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin is about ¼c. lower.

Copper is dull and without change.

Pig Lead is unchanged in demand or price.

Spelter is firmer and in better demand.

Antimony is unchanged.

Nickel remains firm and in good demand.

Tin Plates are still scarce, with spot prices high.

Black Sheets continne high in price with supplies light.

Galvanized Sheets are a shade lower on resumption of mills.

Old Metals are in better demand, prices unchanged.

Sheet Copper is moving in good volume at unchanged prices.

Pig Iron shows strength and increased movement.

Hardware conditions are satisfactory; prices are well maintained and demand keeps up well.

Plumbers' Supplies are moving in good volume, with prices strong.

Wrought Iron Pipe is still scarce and high in price.

Corn Poppers have been advanced in price.

Wire Nails are in good demand at unchanged figures.

Cut Nails are rather scarce, prices show some variation.

Wire is in active demand and prices firm.

White Lead prices are irregular.

Linseed Oil has advanced 15c. a gallon.

Spirits Turpentine is quiet and firm in price.

METAL MARKET.

NEW YORK, September 20, 1901.

Pig Tin.—Considerable business was transacted during the week under review, but it was principally for fnture deliveries, involving shipments to be made up to the end of the year. The market fluctuated somewhat, and declined during the close on the strength of a sharp break in London, due to the fact that American buyers are not taking spot Tin to any extent. The announcement by the Dutch Government that they would sell the same qnantity of Banca next year as was sold this year, estimated to be about 2500 tons every two months, contribnted toward the weakness. Jobbers are quoting Straits Pig in small lots at 26½c. to 27c. per lb.

Copper.—The market is dull and nominal, showing no improvement. Very little bnsiness ls being negotiated, and the controversy regarding the large unsold stock of the principal producers has had a bad effect on business. While it was generally believed that these stocks were very large, it was not thought that they aggregated the alleged 135,000,000 lbs. Small lots of Lake Ingot contlnue to be quoted at 17¼c. to 17½c. per lb. and Castlng Copper at 16¾c. to 17c.

Sheet Copper.—The demand for Sheet Copper contlnues fairly active and without special features of interest. Prices are unchanged on the basis of 21c. per lb. from store.

Pig Lead.—There is no change in this metal, either ln general conditions or prices, which remain on the basis of 4.60c. to 4.62½c. per lb for small lots of American Pig. St. Louis advices report a fair demand in that market, with no changes in prices since last report.

Spelter.—This metal is firmer, owing to the settlement of the Steel strike. The galvanizers have purchased freely and the general consuming interests have done likewise, fearing a marked advance which was calculated to follow a re-entering of the galvanizing interests into the market. We understand, however, that the American Sheet Steel Company were using considerably more Spelter than was generally thought, as the works which were not affected by the strike were operating beyond their normal capacity to compensate for the loss of the mills that were shut down. Good Western brands in small lots are quoted at 4.45c. to 4.50c. per lb. There are renewed rumors regarding progress in the direction of an international consolidation of Zinc interests. We are informed that the negotiations which have been pending for some time in Europe, looking toward a restricted production, are nearing a successful termination. It is said that the Belgian producers have been standing in the way somewhat, but are expected to be brought into line very shortly. There have also been recent negotlations here in the direction of bringing the American miners and smelters together. Certain large interests which are of great importance and which have throughout all similar negotiations held back from any of the proposed schemes are taking a similar stand and show no disposition to enter the present agreement. It is hoped by the promoters of the European combination that an agreement can be arrived at with the American producers restricting the amount of Zinc Ores exported from this country. On the whole, while the European negotiations may be progressing favorably, there is at present apparently no assurance of success as regards the American end of the transaction. A representative of certain American interests is now abroad and is mentioned in connection with the European proceedings, but it is believed in the trade that he is representing more particularly his own concern rather than any combined interests of this country.

Sheet Zinc.—The demand for Sheet Zinc is of moderate proportions and prices are unchanged, jobbers quoting 600-lb. cask lots at 6¼c. per lb. and smaller quantities at 7c.

Antimony—Is unchanged. Hallett's in small parcels is quoted at 8½c. to 9¼c. per lb., and Cookson's at 10½c. to 11c.

Nickel.—No change has taken place in this metal. Prices are firm, small lots being quoted at 60c. to 65c. per lb.

Aluminum.—There is an active demand at former prices. No. 1 Ingot guaranteed over 99 per cent. pure is quoted in small lots at 37c. per lb. and in 100-lb. lots at 35c.

Tin Plates.—The settlement of the Steel strike and the probable resumption o foperations at most of the Tin Plate mills at an early date has created an easier feeling in the market. While the renewed activity at the mills removes to some extent the fear of an absolute famine in Tin Plates during the coming winter, but little relief from the present stringency can be expected for some weeks to come. Whatever mills are now operated are run on orders taken some time ago, and it is said that the American Tin Plate Company have enough of such orders to keep their plants busy practically for the balance of this year. Qnotations are purely nominal. American Bessemer Coke Plates, I C, 14 x 20, are at present selling in small lots at New York and corresponding points anywhere from $7 to $8 per box. Wherever Plates can be obtained in sufficient quantities, however, these prices can be materially shaded. On the other hand Spot Plates are quoted at as high and in some cases even higher prices. Welsh Plates have declined during the week 4½ pence per box.

Sheets.—Now that the strike is over the supply of Sheets will soon be materially increased and buyers will get more prompt deliveries. The American Sheet Steel

Company are behind in deliveries, and it will be several months before they have caught up with back orders. The outside mills are also well filled up for the balance of the year. The present high prices of Sheets seem assured for the next two or three months. Some of the very firm, No. 27, One Pass Cold Rolled Soft Steel Sheets, for delivery next year, but without a fixed price, the official prices of the American Sheet Steel Company to govern these contracts. Jobbers' prices in New York are very firm, No. 27, One Pass Cold Rolled Soft Steel Sheets in small lots, rule at about 4.20c. Galvanized Sheets are a shade lower, 60 per cent. to 60 and 5 per cent. off the list being now the ruling quotation.

Chicago advices are as follows: Manufacturers of winter necessities, such as Stove Pipe, Elbows, &c., are seeking supplies in every direction, and are taking any sizes of Black Sheets they can secure, regardless of waste in cutting. Other consumers of Sheets are also taking what they can find, as stocks are very badly broken. Although the strike is over, it will be two or three weeks before the mills get into good running order and regular shipments can be decided upon. The supply of Galvanized Sheets is somewhat better than that of Black Sheets, but buyers are also being subjected to much inconvenience and cannot always secure the quantities they need. No. 27 Black Sheets are held at 4c. to 4.25c., and Galvanized Sheets at 60 and 5 to 65 for small lots from store.

Old Metals.—Scrap Iron is in better demand, but Old Metals of other descriptions continue dull. Prices are without quotable change. Dealers are paying about the following prices for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 14½c.
Light and Tinned Copper	per lb. 12½c.
Heavy Brass	per lb. 9 c.
Light Brass	per lb. 7½c.
Lead	per lb. 4 c.
Tea Lead	per lb. 3¼c.
Zinc	per lb. 2¾c.
No. 1 Pewter	per lb. 18½c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross ton	$8 00
Wrought Iron Scrap, per gross ton	$10.50 to 11.00
Heavy Cast Scrap, per gross ton	10.00 to 10.25
Stove Plate Scrap, per gross ton	6.75 to 7.00
Burnt Iron, per gross ton	5.00 to 5.50

THE PIG IRON MARKET.

New York.—While earlier in the month there was some buying on the part of some of the pipe interests, no transactions of moment have been closed during the past week, which has been rather quiet. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15,75; No. 2 Plain, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $14.50 to $15; No. 2 Foundry, $14.25 to $14.50; No. 1 Soft, $14.50 to $15; No. 2 Soft, $14.25 to $14.50; No. 3 Foundry, $13.25 to $13.50; No. 4 Foundry, $12.75 to $13.25.

Chicago.—All commission houses report a larger volume of business. A great deal of buying consists of medium quantities. About 10,000 tons were placed under contract in lots of 1000 to 2000 tons. Spot Iron is in active request. Dealers who make a business of producing iron to supply the earload trade report that they have no difficulty in disposing of everything ordered long before it arrives at Chicago. A great deal of inquiry is in hand for all classes of Iron for deliveries covering the first half of next year. Some of the furnace companies are refusing to take any orders for delivery beyond March 1. The outlook is so encouraging that an advance is confidently expected, particularly on Southern brands. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon.	14.90 to 15.15
Southern Coke, No. 1	14.65 to 14.90
Southern Coke, No. 2	14.15 to 14.40
Southern Coke, No. 3	13.65 to 13.90
Southern Coke, No. 1 Soft	14.90 to 15.15
Southern Coke, No. 2 Soft	14.15 to 14.40

Philadelphia.—The demand for Pig Iron is very active, consumers from all points having been good buyers during the past week or two. The local trade, as well as that in New England, appear to want a great deal of Iron, and so many orders have been entered that makers are beginning to feel very indifferent about taking more, unless at extreme prices. Some furnaces are not quoting at all, as they have about as much business as they can handle for this year, besides a fair amount for the first quarter of next year. Consumption is undoubtedly very heavy, but the unusual activity is in a measure due to the absolute exhaustion of stocks and the consequent necessity for replenishing as quickly as possible. Prices for city and nearby deliveries are about as follows, and from 25c. to 50c. less at points within a radius of 100 miles South or West: No. 1 X Foundry, $15.50 to $16; No. 2 Foundry, $14.85 to $15.25; No. 2 Plain, $14.35 to $14.75.

Pittsburgh.—The Bessemer Iron market seems to be slightly firmer in tone. Foundry Iron is in better demand, but prices are no higher. We quote Bessemer Iron in small lots at $15.75 to $16, and No. 2 Foundry at $14 to $14.25, Pittsburgh.

Cincinnati.—The market for Pig Iron is in a very fair condition just now. The situation is a strong one, and trading shows a healthy normal state of affairs. While there may possibly be a little Southern Iron yet to be had on the basis of the minimum figures, it is generally recognized that there is but one price at which Iron can be had, and that is on the $10.50 Birmingham basis. The buying is chiefly confined to lots of less than 1000 tons, and mainly for this year's delivery. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$13.50 to $13.75
Southern Coke, No. 2	13.00 to 13.25
Southern Coke, No. 3	12.50 to 12.75
Southern Coke, No. 4	12.00 to 12.25
Southern Coke, No. 1 Soft	13.50 to 13.75
Southern Coke, No. 2 Soft	13.00 to 13.25
Southern Coke, Gray Forge	12.00 to 12.25
Southern Coke, Mottled	12.00 to 12.25
Ohio Silvery, No. 1	14.60 to 15.00
Ohio Silvery, No. 2	14.10 to 14 60
Lake Superior Coke, No. 1	14.50 to 15.00
Lake Superior Coke, No. 2	14.00 to 14.50
Lake Superior Coke, No. 3	13.50 to 14.00

St. Louis.—A very satisfactory condition appears to exist in the Pig Iron market, and the outlook for a heavy business later on is very promising. On all sides are reported numerous inquiries and an exceedingly good demand for this time of the year. The furnaces are well booked for several months ahead, and there is no inclination to shade present prices. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry	$14.25 to $14.50
Southern, No. 2 Foundry	13.50 to 13.75
Southern, No. 3 Foundry	13.00 to 13.25
Southern, No. 4 Foundry	12.50 to 12.75
No. 1 Soft	14.00 to 14.25
No. 2 Soft	13.50 to 13.75

CHICAGO REPORT.

Scrap Iron and Steel.—Trade is in better condition, as consumers are now disposed to buy more freely. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap	$11.00 to $12.00
Machinery Cast	10.00 to 10.50
Malleable Cast	10.00 to 11.00
Stove Plate (free from burnt)	7.00 to 7.50
Burnt Iron and Grate Bars	5.50 to 6.00
Sheet Iron and Hoops	6.00 to 7.00
Plow Steel	9.00 to 10.00
Breaking Stock	9.00 to ....
No. 2, such as Shovels, Hoes, &c.	.... to 7.00
Old Boilers—whole (Iron)	6.00 to 7.00
Old Boilers (Iron) cut in single Sheets and Rings	9.50 to 10.00
Old Gas Pipe and Boiler Tubes	11.00 to 11.50
Cast Borings	4.00 to 4.25
Turnings	9.50 to 10.00
Horseshoes	.... to 13.00

Old Metals.—Prices are unchanged, the demand being only fair. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	14¾c.
Copper Bottoms	13¼c.
Copper Clips	14¼c.
Red Brass	13⅝c.
Yellow Brass	9½c.
Red Brass Borings	11½c.
Yellow Brass Borings	8¾c.
Light Brass	7¾c.
Pipe Lead	4 c.
Tea Lead	3¼c.
Zinc	2⅝c.
Tin Foil	22 c.
Pewter, No. 1	19 c.
Pewter, No. 2	10 c.

Old Rubber.—Business is light. Dealers' buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$23.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7½c.
Rubber Car Springs	....	4¾c.
Inside Bicycle Tubing	....	21 c.
Outside Tubing	....	7¼c.
Black Rubber	....	4¼c.
White Rubber	....	8½c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—Dealers are enjoying a fine demand, caused by cooler weather and frosty mornings. The supply in local yards is fair. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo	8.25	8.50

THE HARDWARE TRADE.

There was unquestionably something of a disturbance to the regular movement of business as a result of the assassination of the President. The public mind was so engrossed by the tragedy that attention was for the time taken away from business. There was also a question as to the effect the President's death would have upon commercial matters, and an element of serious uncertainty was thus introduced. Some entertained apprehensions that there would be something of a financial revulsion which would interfere with commercial and industrial interests, and some grave prognostications were thus indulged in. Fortunately the course of the market has been most reassuring, and the confident tone which prevails indicates the strength of the situation and the ground for anticipating a continuance of existing prosperity. Things in trade circles are quickly resuming their wonted aspect and activity. The termination of the steel strike is one of the elements which contributes to the confidence of the trade. It is recognized that an important gain has been made in establishing the principle that manufacturers are entitled to run their own business. The coming of the strike, while interfering with business in a way that caused considerable inconvenience, had probably a good deal of influence in maintaining the market directly affected at a critical time when a break in some lines might otherwise have occurred. The shortage of goods of many kinds, owing to inadequate supply of material, still continues, but with the renewed operation of the mills it is anticipated that this condition will soon be corrected. Comparatively few manufacturers have anything like full stocks of goods, and the supply in hands of jobbers and retailers is in many lines light, if not broken. It will thus be some time before there will be an opportunity for the accumulation of goods, and meanwhile it is expected that the demand will be large.

NOTES ON PRICES.

Plumbers' Supplies.—The demand for Plumbers' and Steam Fitters' Supplies continues active and the shortage of goods in certain lines is still as marked as ever, causing considerable inconvenience to contractors, jobbers and consumers. Prices are strong all along the line, but no further advances have been recorded.

Wrought Iron Pipe.—The end of the steel strike holds out encouragement for some measure of relief to the stringency that has prevailed in the Wrought Iron Pipe market for several weeks past. Meantime the demand for all sizes of Pipe used for heating purposes far exceeds the supply and a scarcity is likely to be felt for some time to come, as it will take some weeks before the increased output of the resuming mills of the National Tube Company will be able to make any great impression on the market. Prices are very firm and high and are likely to remain so until the present pressure of demand is relaxed.

Registers.—While a good proportion of the manufacturers of Hot Air Registers, Ventilators, &c., have adopted the new list referred to in our last issue, a good many of the jobbers are still selling from the old list. There is also some irregularity in demand.

Corn Poppers.—An advance has recently been made by the leading manufacturers of Corn Poppers. The demand for this line is, as usual, active at this season.

Wire Nails.—The demand for Wire Nails is of good volume. It is expected that the mills will soon be in position to supply the requirements of the trade more promptly. New York quotations for small lots from store continue at $2.60 per keg.

Cut Nails.—Conditions in the Cut Nail market remain unchanged. Trouble is experienced in getting prompt shipments. In the New York market the recent advances in price is not held to in all cases. Small lots from store are quoted at $2.18 to $2.30 per keg.

Wire.—An active demand is reported for Plain Wire. The mills making the same are still somewhat behind in deliveries. Prices are firm and without change at 2.60c. for Plain Wire and 3c. for Galvanized in small lots.

Window Glass.—The demand for Window Glass continues moderate, and the market is without new or interesting features. According to reports there was a proposition before the Glass meeting at Detroit, about two weeks ago, to reduce prices. The proposition was not favorably received, but the intimation of the necessity of lower prices for the preservation of the Glass combine is taken as an indication of the growth of cooperative factories. Prices are without change, jobbers' quotations being 80 and 20 per cent. discount for less than car lots from store.

White Lead.—The recent advances in the price of Linseed Oil and the consequent unsettled condition of the market are likely to affect the demand for White Lead in Oil. Owing to the previous rapid decline in the price of Oil, irregularities in Lead prices became more pronounced, but the higher prices of Oil may have the effect of steadying the White Lead market. The retail price of America White Lead in Oil is now 7 to 7¼ cents per pound.

Linseed Oil.—On September 12 City Raw Linseed Oil was advanced 5 cents per gallon. Lower prices previously ruling had stimulated demand, and spot supplies had been about exhausted. On the 16th inst. another advance was made in City Raw, amounting to 10 cents per gallon, bringing the retail price up to 66 to 67 cents per gallon. Boiled Oil is 2 cents per gallon advance on Raw. The cause of the last advance is attributed to a sharp advance in seed. There is little Oil obtainable for prompt delivery, and quotations on future deliveries are for prompt acceptance. From present indications no relief is expected until new seed comes into the market more freely.

Spirits Turpentine.—The week has been one of little activity in the Turpentine market. Large buyers are not in the market, and demand has been confined to jobbing lots. Prices have been firm and unchanged at 37½ to 38 cents for small lots.

We are indebted to James M. Swank, general manager of the American Iron and Steel Assoeiation, for a copy of his pamphlet, "Iron and Steel at the Close of the Nineteenth Century." The publication of 40 pages is crowded with useful information. It opens with a general review of the iron and steel industries and contains a chronological record of the leading events in the development of those industries in the United States down to the close of the nineteenth century. Tables are presented giving detailed statistics of the production of leading articles of iron and steel in the United States for the year 1900, the last of the nineteenth century, also a variety of useful statistical information compiled from the reports of the American Iron and Steel Association and the official figures of the Bureau of Statistics of the Treasury Department.

It has been computed that the strike has cost the city of McKeesport $1,000,000 in wages and the loss of one large industry.

Water Proof Blue Prints.

Those who have experienced the annoyance of having blue prints discolored and blurred by rain, and moisture in general, will appreciate, says *Mines and Minerals*, a simple and inexpensive method of water proofing the prints which renders them completely impervious to weather and water. The water proofing medium is refined paraffin, and may be applied by immersing the print in the melted wax, or more conveniently as follows: Immerse in melted paraffin until saturated a uumber of pieces of an absorbent cloth a foot or more square, and when withdrawn and cooled they are ready for use at any time. To apply to a blue print, spread one of the saturated cloths on a smooth surface, place the dry print on it with a second waxed cloth on top and iron with a moderately hot flat iron. The paper immediately absorbs paraffin until saturated and becomes translucent and highly water proof.

The lines of the priut are intensified by the process, and there is no shrinking or distortion. As the wax is withdrawn from the cloths, more can be added by melting small pieces directly under the hot iron. By immersing the priut in a bath of melted paraffin, the process is hastened, but the ironing is necessary to remove the surplus wax from the surface, unless the paper is to be directly exposed to the weather and not to be handled. The irons can be heated in most offices by gas or over a lamp, and a supply of saturated cloths obviates the necessity of the bath.

This process, which was originally applied to blue prints to be carried by the engineer corps in wet mines, is equally applicable to any kind of paper, and is convenient for water proofing typewritten or other notices to be posted up and exposed to the weather.

To Drill Holes in Glass.

In order to drill a hole in glass it is necessary, says the *Pottery Gazette* of Londou, to have a hard and well tempered steel drill. This may be prepared by heating to a dull red, and then plunging into mercury so as to become hard. It is, however, necessary to temper the shaft of the drill. Imbed the point of the drill in a piece of lead. The temperature of the shaft of the drill can be raised by means of a blow pipe till there is a blue color nearly to the point. The drill and lead together are now immersed in cold water, when the first will be ready for work. This tool, when mounted in a holder and with the point moistened with turpentine, attacks glass rapidly. Do not press too heavily when working the drill, and if possible work from both sides of the glass successively. To eularge a hole thus obtained, use a rat tailed file soaked in turpentine. A steel drill may be hardened when at red heat by dipping into any cool liquid.

Another metnod is to staturate commercial muriatic acid with zinc—do this in the open air. The drill should be ground before hardening. When at red heat dip in the solution to harden; or a spear shaped drill, heated to a red heat and hardened in mercury, and then sharpened on an oil stone, may be used. The drill is firmly rotated at the desired spot with an alternate motion, and lubricated with a saturated solution of camphor and spirits of turpentine. Diluted sulphuric acid may also be used as a lubricant.

Sources of Colors.

The sources of the beautiful artificial colors which add so much to the brightness and attractiveness of our surroundings are remarkably varied, as will be seen from the following facts extracted from an English decorating journal: The cochineal insects furnish a great many of the very fine colors. Among them are the gorgeous carmine, the crimson, scarlet carmine, aud purple lakes. The cuttlefish gives the sepia. It is the inky fluid which the fish discharges in order to render the water opaque when attacked. Indian yellow comes from the camel. Ivory chips produce the ivory black and bone black. The exquisite Prussian blue is made by fusing horses' hoofs and other refuse animal matter with impure potassium carbonate. This color was discovered accidentally. Various lakes are derived from roots, barks and gums. Blue black comes from the charcoal of the vine stalk. Lamp black is soot from certain resinous substances. Very little real ultramarine is found in the market. It is obtained from the precious lapis lazuli, and commands a fabulous price. Chinese white is zinc, scarlet is iodide of mercury, and native vermilion is from the quicksilver ore called cinnabar.

CONTENTS.

	Page.
Editorials—	
William McKinley	41
The Difficulties of Consolidations	41
The Stability of Our Business Interests	41
The Importance of Careful Buying	41
The Labor Troubles in the Iron Trade	42
The Western Stove Trade	43
Charles W. Adams	43
Anchor Stoves and Ranges	43
A Remedy for all Stove Troubles	43
The Clover Triumph Range. Illustrated	44
How to Sell Stoves	44
The B C. Bibb Stove Company	45
Art-Garland Base Burners	45
Odd Plates	45
Philadelphia Hardware Merchants' and Manufacturers' Association	46
New England Hardware Dealers' Association	46
The Tin Cow Illustrated	47
Avoiding Dust in Stove and Hardware Stores	47
Stove and Hardware Dealers	47
Pediment Mitering on Wash. Illustrated	48
A New Tin Mining Company	51
Flashings	51
Ideal Boilers	52
Edwin H. Sedgwick	52
Steam Fitters' and Plumbers' Supplies	52
Gasoline Fire Pots and Torches	52
Gasoline Gas Lighting Apparatus. Illustrated	53
Fire Hazards of Heating Systems	53
New York City Notes	54
Heating and Plumbing Notes	54
New Firms and Changes	55
The Weary Drummer	55
The Steel Strike Settled	55
Trade Notes	56
The Letter Box—	
Apparatus Unnecessary to Siphon. Illustrated	57
Trouble With Drying Ovens. Illustrated	57
New Tin Roof Over Old One	58
Durability of Wire and Cut Nails	58
Why Was Lead Pipe Destroyed?	58
Furnace Questions on School House Heating. Illustrated	58
Trade Report—	
Market Summary	59
Metal Market	59
The Pig Iron Market	60
Chicago Report	60
The Hardware Trade	61
Notes on Prices	61
Water Proof Blue Prints	62
To Drill Holes in Glass	62
Sources of Colors	62
Metal and Miscellaneous Prices	63
Labor Exchange—	
Help and Situations Wanted	67

ROOFING SUPPLIES, METALS, TIN PLATES, &c:

The following New York quotations are for small lots: *REVISED SEPTEMBER 20, 1901.*

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots.....₰ lb, 87¢
100-lb lots.....₰ lb, 35¢
Aluminum Sheet, B. & S. gauge. In lots of 50 lbs or more.

	6-in.	14-in.	24-in.
Wider than.....	14-in	24-in.	30-in.
And including.....	₰ lb	₰ lb.	₰ lb.
Nos. 18 to 19.....	$0.42	$0.44	$0.47
" 20.....	.44	.46	.49
" 21 to 23.....	.46	.48	.51
" 24.....	.46	.50	.53
" 25.....	.47	.51	.54
" 26.....	.47	.54	.59
" 27.....	.48	.57	.62
" 28.....	.48	.57	.64
" 29.....	.49	.60	.69
" 30.....	.50	.64	.77

Note.—Lots of less than 50 lbs 5¢ ₰ lb extra.

Antimony—

Cookson.....₰ lb. 10½@11¢
Hallett's.....₰ lb, 8½@9¼¢
U. S.....₰ lb, 8½@9 ¢

Brass—Planished.....net

Roll and Sheet.....15@20% off

Brass and Copper Tubes

Brazed Brass Tubing—

Brown & Sharpe's Gauge the Standard.
List Feb. 26, 1896.

Plain Round Tube.	Per ft.
¼-in. up to 2-in.	$0.35
5-16-in. up to ¾-in.	.36
⅜-in. up to ⅞-in.	.38
7-16-in. up to ½ in.	.41
5-16-in. up to ⅝-in.	.48
¼-in. up to 5-16-in.	.65
3-10-in. up to ¼-in.	1.00
⅛-in. up to 3-16-in.	1.50
Smaller than ⅛-in.	Special
8-in. and larger	Special
2-in. to 3-in. to No. 19, inclusive.	.38

30@35% off.

Copper & Bronze Tubing—

3¢ ₰ lb more than Brass.

Conductors—

Corrugated. *Round or Square.*—
Galvanized ½ or more. N'st'd.....70&5%
" Not Nested.....70&2½%
" Plain Round, ½ or more, Nested.....70&5%
Galvanized, Plain Round, Not Nested. 70&2½%

Spiral Riveted.
Galvanized.....40%
See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—See *Strainers, Conductor.*

Copper—

Lake Ingot.....17¼@17⅝¢
Casting.....16¾@17 ¢
Sheet and Bolt.....21¢ ₰ lb basis
Cold Rolled Sheets.....22¢ ₰ lb basis
Cold Rolled and Polished Sheets..... 23¢ basis
Planished Sheets.....24¢ basis
Bottoms, Pits and Flats.....₰ lb 25¢ basis

Eaves Troughs—

List Feb. 1, 1895.
Lap or Slip Joint, Galvanized, in crates 75&10%

Eave Trough Mitres—

Lap or Slip Joint.....list, 25%

Elbows—Plain Adjustable—

Eastern List.
Tin.....30%
Galvanized.....30%
Perfect "Elbows.....40%

Stove Pipe—

Four-Piece

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz
No. 2.	.65	.70	.75	.80	.85 "
No 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Corrugated
Round or Square.
Galvanized.....60%

Gasoline—See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16.....	₰ lb 3.80....	3.85¢
Nos. 18 to 21.....	₰ lb, 3.90....	3.95¢
Nos. 22 to 24.....	₰ lb, 4.00....	4.05¢
Nos. 25 and 26...	₰ lb, 4.10....	4.15¢
No. 27	₰ lb, 4.20....	4.25¢
No. 28	₰ lb, 4.30....	4.35¢

Russia, Planished, &c.
Genuine Russia, according to assortment.....₰ lb 11@11½¢
Do. Stained.....6¢@10¢
Patent Planished. ₰ lb A, 12¢; B, 11¢ net

Galvanized.

Nos. 10 to 16.....	₰ lb, 12¢	60&5% off.
Nos. 17 to 21.....	₰ lb, 13¢	
Nos. 22 to 24.....	₰ lb, 14¢	
Nos. 25 to 26.....	₰ lb, 15¢	
No. 27.....	₰ lb, 16¢	
No. 28.....	₰ lb, 17¢	
No. 29.....	₰ lb, 19¢	
No. 30.....	₰ lb, 21¢	

36 in. 1¢ ₰ lb higher

Kerosene—See *Petroleum Products*

Lead—

American Pig.....4.60@4.62½¢
Bar.....5⅛@5¼¢
Pipe.....6½¢.....20% off
Tin Lined Pipe.....12½¢.....20% off
Block Tin Pipe.....40¢.....20% off
Sheet Lead, full rolls... 7¼¢.....20% off
Sheet Lead, cut.....7¾¢.....20% off
Old Lead in exchange, 4½¢ ₰ lb.

Mitres, Eave Trough—See *Eave Trough Mitres.*

Nickel—

Per lb.....60@65¢

Paints, Oils, &c.—

Lead, White, Atlantic and Jewett's, 7¼¢
Lead. Amn. White, in oil..... 7@7¼¢
Lead, Red. bbls. and ⅛ bbls..... 7@7¼¢
Lead, Red, kegs..... 7@7¼¢
Linseed Oil:
Raw, ₰ gal..... 66@67¢
Boiled..... 68@69¢
Spirits Turpentine:
In bbls.....37½@38 ¢
Putty:
In barrels and ½ bbls.....2½
In tin cans.....3½
In bladders.....2¼

Palm Oil. 1500 lb casks.

Fancy Lagos.....₰ lb 6 ¢
Clarified.....₰ lb 5¼¢
Accra.....₰ lb 5⅛¢
Half Jack.....₰ lb 5¼¢

Petroleum Products—

In Barrels (Barrel Included)
Stove Gasoline.....₰ gal. 12½@13¢
Kerosene.....₰ gal. 13@13½¢

Pipe, Drain.....40%

Pipe, Spiral—See *Conductors*

Registers—

List Sept. 2, 1901.
Black Japanned.....70%
White Japanned.....70%
Nickel Plated.....70%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze.....70%
Electroplated in Brass, Bronze or Copper.....70%
White Porcelain.....60%
Solid Brass and Bronze Metal.....50%

Roofing Material—

Heavy Single Ply Tar Felt,..... ₰ ton $30 00
2 Ply Roofing Felt.....₰ roll, 108 sq. ft. 65¢
3 Ply Roofing Felt....₰ roll, 108 sq. ft. 85¢
Roofing Pitch ₰ bbl.....$2 38

Rosin

(Barrels of 280 lb. Barrels weigh actually about 400 lb).
Common and Good—Strained.
Rosin, C. & D.....₰ bbl. $1.40 @$1.42
Rosin, E. & F.....₰ bbl. 1.55 @ 1.65
Rosin, G. & H.....₰ bbl. 1.70 @ 1.75
Rosin, I. & K.....₰ bbl. 1.80 @ 2.15
Rosin, M. & N.....₰ bbl. 2.60 @ 3.15

Seamless Brass Tubes—

Net List, February 6, 1899.

Shoes and Elbows—See *Elbows and Shoes.*

Slate Roofing—

According to size, f. o. b. cars, Quarry Station.
Pennsylvania:
Best Bangor, ₰ sqr. .....$3.25@$4.50
No. 1 Bangor Ribbon, ₰ sq 3.00@ 3.50
Pen Argyle, ₰ sqr..... 3.00@ 3.75
Peach Bottom, ₰ sqr..... 4.85@ 5.60
No. 1 Boys, ₰ sqr..... 3.35@ 3.55
No 1 Chapman Keystone, ₰ sqr..... 3.25@ 4.25
Vermont:
Sea Green, ₰ sqr.....$2.00@$3.00
Purple, ₰ sqr..... 3.75@ 4.25
Unfading Green, ₰ sqr... 3.25@ 4.50
Red, ₰ sqr..... 6.50@11.00
Maine:
Brownville, Unfading Black:
No. 1 quality.....$5.25@7.50
No. 2 quality.....$4.25@6.00

Solder—

⅛&⅙ guaranteed.....18½@19¢
No. 1.....15 @17 ¢
Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

Concentrated Soldering Flux.
f. o. b. New York.
In barrels. ₰ lb.....4¢
Smaller quantities. ₰ lb.....5¢
Eureka Soldering Flux—Triple Strength
In barrels, ₰ lb..... 3 ¢
Smaller quantities, ₰ lb.....3½¢
Eureka Soldering Flux—Extra Concentrated
In barrels, ₰ lb..... 4½¢
Smaller quantities, ₰ lb.....5 ¢
Eureka Soldering Flux—Crystal.
In 100-lb cases, ₰ lb.....7¢
Gedney's Soldering Fluid.
In carboys or barrels, ₰ lb.....2¢
$1.50 for carboy or barrel; money refunded when returned.
Lennox Soldering Fluid.
In barrels, ₰ lb.....2¢
In carboys. ₰ lb.....3¢
Perfection Soldering Flux.
No charge for package.
Bbls. about 500 lb, ₰ lb.....3¢
½ bbls., about 300 lb, ₰ lb.....3½¢
Kegs, about 110 lb. ₰ lb..... 3½¢
Kegs about 55 lb, ₰ lb.....4¢

Yager's Soldering Salts.
1 lb bottles, each.....60%
5 lb bottles, ₰ lb.....40%

Soldering Coppers—

Per lb.....22@24¢

Spelter—

Western Spelter.....4.45@4½¢

Spiral Pipe—See *Conductors.*

Stove Pipe Elbows—See *Elbows, Stove Pipe.*

Stove Trucks—See *Trucks, Stove*

Strainers, Conductor—

Galvanized.....50%

Tin Pigs and Bars—

Banca, pigs, ₰ lb.....26¾@27¢
Straits, pigs, ₰ lb.....26½@26¾¢
Straits, in bars, ₰ lb.....27¼@27½¢

Tin Plates, American Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Celland Grade:		
IC,	14 x 20.....	$8.00
IX,	14 x 20.....	9.50
IXX,	14 x 20.....	10.75
IXXX,	14 x 20.....	12.00
IXXXX,	14 x 20.....	13.25
Melyn Grade:		
IC,	14 x 20.....	7.50
IX,	14 x 20.....	9.00
IXX,	14 x 20.....	10.25
IXXX,	14 x 20.....	11.50
IXXXX	14 x 20.....	12.75
Allaway Grade:		
IC,	14 x 20.....	7.00
IX,	14 x 20.....	8.10
IXX,	14 x 20.....	9.20
IXXX,	14 x 20.....	10.30
IXXXX,	14 x 20.....	11.40

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight } IC, 14 x 20.....$7.15@7.25
" " IX, 14 x 20.....$8.00@8.25

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 lb	15¢
95 lb	20¢
90 lb	25¢
85 lb	30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 lb coating and $2.50 to $3 00 advance for 15 lb and upward.

About 40 lb coating.....	$18.00@18.50
About 30 lb coating.....	17.25@17.75
About 20 lb coating.....	15.25@15.75
About 15 lb coating.....	13.25@13.75
About 8 lb coating.....	.....@12.50

Boiler Plates, American—

IXX, 14 x 26..(112 sheets)..... $16.00
IXX, 14 x 28..(112 sheets)..... 17.00
IXX, 14 x 31..(112 sheets)..... 18.50

Troughs Eave—See *Eave Trough*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00
Steel Lock Frame, per doz..... 18.00
Daisy Improved pattern, ₰ doz... 18.00

Tubing—

Tin.....50% | Galvanized.....50%
Fittings for do.....40%

Zinc—

600 lb casks ₰ lb.....6¾¢
Per lb.....7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:
30 gal.....65&10@70%
35 and 40 gal.....65@65&10%
Other sizes up to 52 gal... 60@60&10%
52 gal. and above.....60@60&5%
Extra Heavy Boilers:
18 to 52 gal .....50&10@60%
53 gal. and above .....50@55%

Brass Work, Plumbers—

List of December 7, 1896.
Ground Key Work:
Rough Bibs and Stops.....65@70%
Finished Bibs.....60@65%
Rough Stop and Stop and Waste Cocks.....70@70&5%
Rough Stop and Stop and Waste Cocks, Patented.....65@65&5%
Compression Bibs.....65@65&5%
" " Flanged.....65@70%
Compression Bath Cocks and Double Bath Cocks.....65@70%
Compression Basin Cocks.....65@65&5%
Fuller Bibs.....70@70&10%
Fuller Basin Cocks Nos. 1 to 4.70&10@75%
Fuller Bath Cocks, No. 4½.....$2.00 net

Miscellaneous—

Basin Clamps.....60@65%
Basin Plugs.....60@65%
Chain Stays.....60&5@70%
Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face..₰ set	$0.95	$1.05
Ground Face ₰ set	1.00	1.10

Sink or Bath and Wash Tray Plugs. 60@65%
Soldering Nipples.....70&5@75%
Soldering Unions.....70&5@75%

Earthenware—

Porcelain, List of Aug. 15, 1901:

	Class
Basins, Urinals and Hoppers....	A, 30%
Closet Bowls, Sundries, Washouts and Pedestals.....	B, 40%
	C, 50%

Brown Glazed.....20%

Fittings—

Brass Fittings—

Finished.....65@70%
Rough.....65@70%
Bushings.....65@70%
Unions, Rough and Finished....70@70&5%

Iron—

List of Oct 7, 1899
Cast Iron Fittings, Black and Galvanized, Standard sizes. 60&5@60&10&5%
Cast Iron Bushings and Plugs.....65@70%
Cast Iron Flanges.....65@70%
Malleable Iron Fittings..... 50@55%
Wrought " " Bushings.....05&5@70%
" " Unions.....70@70&10%
" " Nipples.....65@70%
" " Couplings.....65@70%
" " Long Screws.....65@70%
Pipe Hangers, Universal.....50%

Lavatories—

Porcelain Enameled Iron.....30%

Pipe—

Cast Iron Soil—

List Feb. 25, 1901.
2 to 6 inch inclusive.
Standard.....60@60&5%
Extra Heavy.....65@70%
All Fittings.....70@75%

Wrought Iron—

List Feb. 15, 1900
Random Lengths.

	Black.	Galv.
⅛ to 1 inch.....	40%	20%
1¼ inch.....	50%	30%
1½ to 10 inch.....	55%	40%

NOTE.—*Manufacturers' prices are much lower than above, but prompt shipments are not obtainable.*

Sinks, Etc.— Cast Iron—

	Black.	Galv.
Sinks, Square, Half Round and Corner..	60%	60@65%
Sink Legs.	60%	60@65%
Sink Backs.....	60%	60@65%

Wrought Steel—

New Era, Galv'd and Enameled. ..70&5%
New Era, Painted.....50&10%
L. & G.....50%
Cesspools, Cast Iron.....60%
Boiler Stands, Cast Iron.....60%

Traps—

Drawn Lead Traps, List June 8, 1901..... 50@50&5%

Tubs, Bath—

Cast Iron Enameled Bath Tubs.
Regular Patterns. Guaranteed.... .. 30&10@45%
All Special Patterns..... ..25%
Non-guaranteed Brands, complete line 45%

Steel Clad Copper Lined, list of Feb. 1, 1899.....45@50%
Solid Porcelain—Class A, 30%; B, 40%; C, 50%.
Solid Copper, list of Feb. 1, 1899.....40%

Valves, Cocks, &c.—

Iron Body Valves.....70@70&5%
Air Cocks and Radiator Air Cocks..... 70@70&5%
Jenkins Bros.':
Iron Body Valves, except Gate Valves 60%
All Iron Valves, except Gate Valves.. 40&5%
Iron Body Gate Valves. .... 50@50&5%
All Iron Gate Valves... ..... 35@40%
Iron Cocks, all Iron.....05@70%
" " with Brass Plugs.....60@65%
Brass Globe, Angle and Cross Valves... 65@65&10%
" " and Angle Valves, hose outlet..... 65@65&10%
Brass Garden Hose Valves...65&10@70%
" Horizontal, Vertical and Angle Check Valves.....60@65%
Brass Safety Valves.....55%
" " Low Pressure....55%
Brass Radiator Valves.....05@70%
Jenkins' Disc:
Brass Radiator Valves.....70%
Brass Globe, Angle, Cross and Corner Valves.....60%
Brass Safety and Check Valves... 50%
Brass Gate Valves.....60%
Brass Steam Cocks.....65@65&10%
" Gas Meter and Union Meter Cocks.....65@65&10%

CLASSIFIED LIST OF ADVERTISERS.

Acetylene Gas Generators.
International Heater Co., Utica, N. Y.

Agate Nickel-Steel Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., N. Y.

Aluminum Ingots.
Janney, Steinmetz & Co., Phila., Pa.

Aluminum Scrap Buyers.
Janney, Steinmetz & Co., Phila., Pa.

Aluminum Sheets.
Janney, Steinmetz & Co., Phila., Pa.

Architectural Ornaments.
Edwards Mfg. Co., Covington, Ky.
Friedley & Voshardt, Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.

Ball Cocks
Foster, F. W. Mfg. Co., Boston, Mass.

Black Plates.
American Tin Plate Co., New York.

Boilers, Range.
Koven, L. O. & Bro., 50 Cliff St., N. Y.

Brass Goods
Jenkins Bros., 71 John St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Brass Sheets, Rolls, &c.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N.Y.

CanMakers' Tools and Machines.
Bliss, E. W. Co., Brooklyn, N. Y.
Gordon, W. J., Phila., Pa.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.
Stiles & Parker Press Co., Brooklyn, N. Y.
Toledo Machine & Tool Co., Toledo, O.

Castings, Iron.
Cheney, S. & Son, Manlius, N. Y.

Ceilings, Metallic.
Berger Mfg. Co., Canton, O.
Brooklyn Metal Ceiling Co., Brooklyn, N. Y.
Canton Steel Roofing Co., Canton, O.
Dowman Mfg. Co., Atlanta, Ga.
Eiler, J. H. & Co., Canton, O.
Friedley & Voshardt, Chicago, Ill.
Gerock Bros. Mfg. Co., St. Louis, Mo.
New York Iron Roofing & Cor. Co., Jersey City, N. J.

Cellar Drainers.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Coal Vases.
Cincinnati Stamping Co., Cincinnati, Ohio.

Coils.
National Pipe Bending Co., New Haven, Conn.

Conductor Pipe and Elbows.
Berger Bros. Co., Philadelphia, Pa.
Clark, Quien & Morse, Peoria, Ill.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
McClure & Co., Pittsburgh, Pa.
Marlin & Co., Pittsburgh, Pa.

Copper, Roofing and Cornice.
Gummey, McFarland & Co., Phila., Pa.
Hungerford, U. T. Brass & Copper Co., 121 Worth St., N.Y.

Cornice Machinery.
Double Truss Cornice Brake Co., Buffalo, N. Y.
Dreis, Andrews & Krump, Chicago, Ill.
Keene, Geo. C. & Co., Cincinnati, O.
Niagara Machine & Tool Works, Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Phila. Machine Tool Co., Phila., Pa.
Robinson, J. M. Mfg. Co., Cincinnati, Ohio.

Cornice Work, Galvanized Iron.
Garry Iron & Steel Co., Cleveland, O.
Marlin & Co., Pittsburgh, Pa.

Couplings. *(See Pipe Couplers.)*

Cresting.
Watson, Jas. H. Est., Crawfordsville, Ind.

Cut Offs, Rain Water.
Cooney & Geiger, Indianapolis, Ind.
Kianer Mfg. Co., Dubuque, Iowa.

Damper Clips.
Brohard Co., Phila., Pa.

Dampers.
Greene, W. F., Est. of, Troy, N. Y.
Howes, S. M. Co., Boston, Mass.
Troy Nickel Works, Troy, N. Y.

Dash Lamps.
Dietz, R. E. Co., New York.

Die Stocks.
Curtis & Curtis Co., Bridgeport, Ct.

Drop Hammers.
Bliss, E. W. Co., Brooklyn, N. Y.
Toledo Mach. & Tool Co., Toledo, O.

Dumb Waiters.
Energy Elevator Co., Phila., Pa.

Eave Troughs.
Berger Bros. Co., Philadelphia, Pa.
Berger Mfg. Co., Canton, O.
Clark, Quien & Morse, Peoria, Ill.
Eiler, J. H. & Co., Canton, O.
Marlin & Co., Pittsburgh, Pa.
Watson, Jas. H. Est., Crawfordsville, Ind.

Eave Trough Hangers.
Berger Bros. Co., Phila., Pa.
Berger Mfg. Co., Canton, O.
Watson, Jas. H. Est., Crawfordsville, Ind

Eave Trough Machines.
Marlin & Co., Pittsburgh, Pa.

Elbows, Stove Pipe.
Lawrence-Letts Elbow Co., Ltd., Waverly, N. Y.
Reeves Mfg. Co., Canal Dover, O.

Enameled Ware.
Lalance & Grosjean Mfg. Co., 19 Cliff St., New York,
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Faucets.
Clark Novelty Co., Rochester, N. Y.
Litchfield, J. M., 105 Beekman St., N.Y.

Fire Brick.
Donaldson, O. G. & D. H., Buffalo, N.Y.
Newton, W. M., Albany, N. Y.
Presbrey Stove Lining Co., Taunton, Mass.
Valentine, M. D. & Bro. Co., Woodbridge, N. J.
Williams Stove Lining Co., Taunton, Mass.

Fire Pots.
Burgess Soldering Furnace Co., Columbus, Ohio.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Fire Sets.
Troy Nickel Works, Troy, N. Y.

Flue Stoppers.
Stuber & Kuck, Peoria, Ill.

Furnace Cement.
Colebrook, W. H. Sons & Co., Syracuse, N. Y.
Perkins, J. L. & Co. Chicago.

Furnace Pipe and Fittings.
International Heater Co., Utica, N. Y.
Meyer, F. & Bro. Co., Peoria, Ill.
Osborn, J. M. & L. A., Cleveland, O.
Safety Furnace Pipe Co., Detroit, Mich.
Schaffer, Jno. P., Pittsburgh Pa.

Furnaces and Heaters.
Amer. Furnace Co., St. Louis, Mo.
Barstow Stove Co., Providence, R.I.
Beckwith, P. D., Est. of, Dowagiac, Mich.
Bergstrom Bros. & Co., Neenah, Wis.
Bibb, B. C. Stove Co., Baltimore, Md
Boynton Furnace Co., 207 Water St., N. Y.
Brand Stove Co., Milwaukee, Wis.
Brien Heater Co., Hoosick Falls, N. Y.
Co-operative Foundry Co., Rochester, N. Y.
Cory, Uzal & Co. 210 Water St., N. Y.
Dean Boiler Co, Boston, Mass.
Dighton Furnace Co., Taunton, Mass.
Enterprise Foundry Co., Rochester, N. Y.
Floyd, Wells & Co., Royersford, Pa.
Forest City Fdry. & Mfg. Co., Cleveland, Ohio.
Graf Furnace Co., 208 Water Street, New York.
Hart & Crouse Co., Utica, N. Y.
Howes, S. M. Co., Boston, Mass.
International Heater Co., Utica, N. Y.
Keeley Stove Co., Columbia, Pa.
Kelsey Furnace Co., Syracuse, N. Y.
Lennox Machine Co., Marshalltown, Iowa.
Magee Furnace Co., Boston, Mass.
Meyer, F. & Bro. Co., Peoria, Ill.
Mueller, L. J. Furnace Co., Milwaukee, Wis.
Noyes & Nutter Mfg. Co., Bangor, Maine.
Richmond Stove Co., Norwich, Conn.
Schaffer, John P., Pittsburgh, Pa
Schwab, R. J. & Sons Co., Milwaukee, Wis.
Sheppard, Isaac A. & Co., Phila., Pa.
Stamford Foundry Co., Stamford, Ct.
Stanton Heater Co., Martins Ferry, O.
Tubular Heating and Ventilating Co., Phila., Pa.
Utica Heater Co., Utica, N. Y.
Wood & Bishop Co., Bangor, Me.

Gas Fuel.
Williams Stove Lining Co., Taunton, Mass.

Gas Heaters. *(See Stoves and Ranges, Gas.)*

Gas Machines.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Granite Steel Ware.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Groovers.
Wheeler, W. A., Indianapolis, Ind.

Heat Regulators.
Howard Thermostat Co., Oswego, N.Y.

Heaters, Steam and Hot Water.
American Radiator Co, Chicago, Ill.
Barstow Stove Co., Providence, R.I.
Boynton Furnace Co., 207 Water St., N. Y.
Dean Boiler Co., Boston, Mass.
Dighton Furnace Co., Taunton, Mass.
Drake, W. H., Newark, N. J.
Gorton & Lidgerwood Co., 96 Liberty St., New York.
Gurney & Co., Boston, Mass.
Gurney Heater Mfg. Co., Boston, Mass.
Hart & Crouse Co., Utica, N. Y.
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Magee Furnace Co., Boston, Mass.
National Pipe Bending Co., New Haven, Conn.
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Richmond Stove Co, Norwich, Conn.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith, H. B. Co., Westfield, Mass.
Smith & Anthony Co., Boston, Mass.
Smith & Thaver Co., Boston, Mass.
Stolz, Frank D., Chicago, Ill.
Utica Heater Co., Utica, N. Y.
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Iron and Steel, Sheet. *(See Sheets, Iron and Steel.)*

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Amer. Sheet Steel Co., New York.

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Garry Iron & Steel Co., Cleveland, O.

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Dietz, R. E. Co., New York.

Lanterns.
Dietz, R. E. Co., New York.

Lath, Metallic.
Schratwiesers Metal Lath Works.

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Colwell Lead Co., 63 Centre St., N. Y.

Lead Washers.
Littleford Bros., Cincinnati, O.

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Ohio Mica Co., Canton, Ohio.
Palermo Mica Co., 115 Beekman St., N. Y.

Milk Cans.
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Oil Heaters. *(See Stoves and Ranges, Oil, Vapor and Gasoline.)*

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Patent Solicitors.
Hamlin, G. R., Washington, D. C.
Howson & Howson, Philadelphia, Pa.
Stocking, E. B., Washington, D. C.

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Gobeille Pattern Co., Cleveland, Ohio.
Vedder Pattern Wks., Troy, N. Y.

Perforated Sheet Metal.
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Wister, L. & R. & Co., Philadelphia, Pa.

Pipe Cutting and Threading Machines.
Livermore, H. F., Boston, Mass.

Pipe Couplers.
New Haven Novelty Machine Co., New Haven, Conn.

Pipe, Water and Gas.
Miliar, C. & Son Co., Utica, N. Y.

Pipe Fittings
Vanderman Plumbing & Heating Co., Wilmantic, Conn.

Pipe Joints.
Estabrook's Sons, R., Boston, Mass.

Pipe Joint Cement.
Callahan, Geo. & Co., 218 Front Street, N. Y.

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Colwell Lead Co., 63 Centre St., N. Y.
Estabrook's Sons, R., Boston, Mass.
Foster, F. W. Mfg. Co., Boston, Mass.
Lamb & Ritchie, Cambridge, Mass.
National Pipe Bending Co., New Haven, Conn.
New Haven Novelty Machine Co., New Haven, Conn.
Pierce, Butler & Pierce Mfg. Co., Syracuse, N. Y.
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SEE ALPHABETICAL INDEX, PAGE 66.

Miner & Peck Mfg. Co., New Haven, Coun.
Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
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SEE ALPHABETICAL INDEX, PAGE 66.

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Newsdealers or Booksellers in any part of the world may obtain *The Metal Worker* through The American News Company, New York, U. S. A.; The International News Company, New York, U. S. A., and London, England; or The San Francisco News Company, San Francisco, Cal., U. S. A.

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ALPHABETICAL LIST OF ADVERTISERS.

Adam, W. J. 37
Adler, H. Co. 9
American Furnace Co. 24
American Hardware Mfg. Co. 81
American Radiator Co. 18
American Sheet Steel Co. ....1&76
American Tin Plate Co. 76
Artistic Enameling Wks. 9
Asphalt Ready Roofing Co .. 77
Atlas Radiator Pedestal Co... 29
Auld & Conger 71
Ayling Bros. 33
Barstow Stove Co. 84
Beckwith, P. D., Est. of 2
Berger Bros. Co. .....36&72
Berger, L. D. 80
Berger Mfg. Co 78
Bergstrom Bros. & Co. 23
Bertsch & Co. 82
Bibb, B. C. Stove Co. 19
Bliss, E. W. Co. 82
Blodgett, G. S. Co. 27
Boynton Furnace Co. 6
Brand Stove Co. 21
Braner, A. G. 83
Bray, J. & Co. 71
Bridgeport Crucible Co. 35
Brien Heater Co. 26
Brohard Co. 36
Brooklyn Metal Ceiling Co. ... 74
Bruce & Cook. .....77&84
Bruckcr, M. 33
Burgess Soldering Furnace Co. 39
Burton, W. J. & Co. 29
Callahan, Geo. & Co. 72
Canton Steel Roofing Co. 79
Castle, Wilmot & Co. 29
Chamber of Commerce. 68
Chency, S. & Son 1
Cincinnati Stamping Co. ...29&80
City Forge & Iron Works. 36
Clad, V. & Sons, Inc. 81
Clark, Henry N. Co. 33
Clark Novelty Co. 70
Clark, Quien & Morse. 75
Clason Arch. Metal Works... 71
Clayton & Lambert Mfg. Co.. 30
Clough, R. M. 83
Colebrook, W. H. Sons & Co. 32
Colwell Lead Co. 38
Connors, Wm. Paint Mfg. Co. 74
Cooney & Geiger. 72
Co-operative Foundry Co. .16&17
Cope, Geo. W 31
Cortright Metal Roofing Co... 73
Cory, Uzal & Co 30
Crosby Steam Gage & Valve Co. 1
Curtis & Curtis Co. 38
Dangler Stove & Mfg. Co. 27
Dean Boiler Co. 25
Detroit Stove Works. 13
Dietz, R. E. Co. 69
Dighton Furnace Co. ..... 10&32
Dixon, Jos. Crucible Co. 32
Donaldson, O. G. & D. H. 33
Double Truss Cornice Brake Co 80
Dowman Mfg. Co. 72
Drake, W. H. 26
Dreis, Andrews & Krump. 80
Dronve, G. Co. 80
Edwards, J. H. 37
Edwards Mfg. Co. 79
Eclipse Stove Co. 27
Eller, J. H. & Co. 79
Energy Elevator Co. 37
Enterprise Foundry Co. 25
Enterprise Stove Co. 12
Esterbrook's, R. Sons. 37
Excelsior Stove Mfg. Co. 13
Excelsior Tool & Mch. Wks.. 82
Fanner Mfg. Co. 36
Fenn, Geo. E. 72
Floyd, Wells & Co. 21
Follansbee Bros. Co. 1
Forest City F'dry & Mfg. Co.. 26
Foster, F. W. Mfg Co. 39
Friedley & Voshardt. 78
Frink, I. P. 84
Fuller & Warren Co. 1
Galesburg Cornice Works.... 72
Galt, John & Sons. 71
Garry Iron & Steel Co. 77
Garvin Machine Co 80
Genuine Bangor Slate Co. 71
Gerock Bros. Mfg. Co. 73
Globe Ventilator Co. 72
Gobeille Pattern Co. 33
Gordon, W. J. 83
Gorton & Lidgerwood Co. 1
Graff Furnace Co. 24
Greene, W. F., Est. of 34
Gnmmey, McFarland & Co... 75
Gunster & Forsyth. 39
Gurney & Co. 28
Gurney Heater Mfg. Co. 21
Hamlin, G. R. 71
Harrington & King Perforating Co. 66
Hart & Crouse Co. 23
Heath, C. C. & Co. 19
Hessler, H. E. Co. 35
Hoffman, Geo. W. 31
Howard Thermostat Co 30
Howes, S. M. Co. ....15 28, 33&36
Howson & Howson 69
Hungerford, U. T., Brass & Copper Co. 83
Independent Register Co. 30
International Correspondence Schools. 68
International Heater Co. 3
Janney, Steinmetz & Co. 71
Jenkins Bros. 1
Johnson, E. J. & Co. 71
Joliet Stove Works. 11
Keeley Stove Co. 12
Keene, Geo. C. & Co 88
Kelsey Furnace Co. 40
Kemp, C. M. Mfg. Co. 37
Kewanee Boiler Co. 24
Kleley & Mueller. 1
Klauer Mfg. Co. 73
Koven, L. O. & Bro. 37
Lalance & Grosjean Mfg. Co.. 70
Lamb & Ritch e. 39
Lawrence-Letts Elbow Co.... 34
Lennox Machine Co. 30
Litchfield, J. M. 70
Littleford Bros. 73
Livermore, H. F. 88
McClure & Co. 84
McLeod & Henry Co. 1
McSherry, Chas. 81
Magee Furnace Co ..... 1&12
Magoon, A. J. & Son 32
Marcy Stove Repair Co. 35
Marlin & Co. 73
Marston, I. G. & Co. 83
Meurer Bros. Co. 75
Meyer, F. & Bro. Co 21
Michigan Stove Co. .....4&5
Millar, Chas. & Son Co. 84
Miner & Peck Mfg. Co 37
Montross Metal Shingle Co.... 73
Morgan & Co. 38
Mueller, L. J. F'ce Co. 22
Munsell, E. & Co. 32
National Enameling & Stamping Co. 40
National Pipe Bending Co.... 26
New Haven Novelty Machine Co. 39
Newton, Wm. M. 1
New York Iron Roofing & Corrugating Co. 75
New York Trade School. 68
Niagara Machine & Tool Wks. 81
Noyes & Nutter Mfg. Co. 31
O'Halloron & Jacobs. 71
Ohio Mica Co. 32
Ohl, Geo. A. & Co. 82
Osborn, J. M. & L. A 77
Ostrander, W. R. & Co. 70
Palermo Mica Co. 32
Peck, Stow & Wilcox Co. 81
Perkins, J. L. & Co. 35
Phila. Machine Tool Co. 81
Pierce, Butler & Pierce Mfg. Co. 29
Pittsburgh Stove & Range Co. 18
Portsmouth Stove & Range Co. 8
Preshrey Stove Lining Co. 35
Quincy Fdry & Novelty Co... 13
Rasner & Dinger. 80
Reeves Mfg. Co. 74
Resor, Wm. & Co. 6
Rhodes, L. E. Co. 37
Richmond Stove Co. 80
Ringen Stove Co. 7
Robinson, J. M. & Co. 83
Rochester Radiator Co. 28
Rutland Fire Clay Co. 34
Sackman, F. A. 70
Safety Furnace Pipe Co. 28
Salem Nail Co. 72
Samuel, M. & L. Benjamin & Co. 77
Sanborn, John 77
Saunders', D. Sons. 38
Schaffer, John P. 25
Schratwiesers Metal Lath Works. 77
Schwab, R. J. & Sons Co. 22
Schwerdtle Stamp Co. 71
Seavey Mfg. Co. 31
Shepard, Sidney & Co. 31
Sheppard, Isaac A. & Co. 1
Silver & Co. 69
Smith, H. B. Co. 20
Smith & Anthony Co. 84
Smith, Chahot & Co. 30
Smith & Thayer Co 28
Smith-Warren Co. 74
Special Notices. 68
Sperry, D. R. & Co. 70
Stamford Foundry Co 29
Stanton Heater Co. 28
Stiles & Parker Press Co. 82
Stocking, E. B. 69
Stolz, Frank D. 26
Stowell Mfg. Co. 73
Stuber & Kuck. 31
Swaine, F. J. Co. 81
Taylor Co., N. & G. 84
Toledo Mch. & Tool Co. 80
Townley, H. P. 68
Trimont Mfg. Co. 37
Troy Nickel Works. 35
Tubular Heating & Ventilating Co. 15
Tucker & Dorsey Mfg. Co. 32
Union Stove Repair Co. 36
Utica Heater Co. 14
Valentine, M. D. & Bro. Co... 35
Van, John, Range Co. 8
Vance Boiler Works. 26
Vanderman Plumbing & Heating Co. 38
Vedder Pattern Works. 36
Vogel, William & Bros 69
Vulcan Metal Refining Co. 68
Vulcan Western Co. 63
Walker & Pratt Mfg. Co. 9
Washburne, E. G. & Co. .....72&73
Watson Jas. H. Est. 73
Wayne, Anthony Mfg. Co. 70
Weir Stove Co. 84
Weiss, H. & Co. 80
Wheeler, W. A. 82
Williams Stove Lining Co. 34
Wister, L. & R. & Co 84
Wood & Bishop Co. 30
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Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Original letters of reference should not be inclosed with replies to advertisements appearing in these columns, as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

Man familiar with stove trade to handle stove repairs as a side line on a salary basis for territory tributary to Chicago. Box 141, care *The Metal Worker,* 1205 Fisher Building, Chicago, Ill. Sept. 21

Have a good opening for an all around man; one who can do tin work, some plumbing, pump work, &c.; will pay such a man $2.25 per day the year around as long as he wants to remain; do not want a drinking man. Box 142, care *The Metal Worker,* 1205 Fisher Building, Chicago, Ill. Sept. 21

A FOREMAN for large cornice and skylight shop in Greater New York; only a man who is competent to handle 30 to 40 workmen and machine hands need apply; references required, also state wages desired and experience. "A. B. C.," care *The Metal Worker,* New York. Sept. 21

A young man of good family and some experience as BOOKKEEPER and SALESMAN in a well known manufacturing business; reference required. "R. H. C.," care *The Metal Worker,* New York. Sept. 21

First-class FURNACE SALESMAN; one thoroughly familiar with trade in the New England States; can commence business now or January 1; splendid opening for bright, energetic, capable man; permanent employment. "Heat," care *The Metal Worker,* New York. Sept. 21

In New England States, January 1, 1902, first-class STOVE SALESMAN; one having large acquaintance with the furniture trade preferred; references. "Cooking," care *The Metal Worker,* New York. Sept. 21

High grade TRAVELING SALESMAN; patented tool that joins lead pipes quicker and better than the plumbers wipe joints; big money to the right man. Bailey-Farrell Mfg. Company, Pittsburgh, Pa. Sept. 21

At once, an all around MECHANIC, PLUMBER, TINNER, GENERAL JOBBER; good wages year round; married man about 30 years preferred. Box 135, Port Henry, N. Y. Sept. 21

An up to date CORNICE MAN who understands laying out and making all kinds of work; general jobber for shop work; nice town, healthy climate; only sober men need apply. R. E. Hogan, Wilson, N. C. Sept. 21

A good, experienced TINSMITH; steady work for the right man. M. McFadden, 301 Burnett street, New Brunswick, N. J. Sept. 21

Three SHEET IRON WORKERS, good at riveted work; steady job; state wages, experience and where employed. "D. N.," Station A., Boston, Mass. Sept. 21

A good all around TIN and SHEET IRON WORKER; one who understands ordinary plumbing, fixing pumps, and work generally done in a country shop. Geo. H. Smith, Port Jefferson, L. I., N. Y. Sept. 21

Thoroughly competent TINSMITH who has knowledge of plumbing and iron pipe work to take permanent position in country shop; two men and apprentice employed; very little roofing; cheap rents; water works; chance for advancement. "Permanent," Box 25, Milroy, Pa. Sept. 21

Experienced STEAM HEATING SOLICITOR and SALESMAN, acquainted with the New York builders; state age, salary and references. Raisler Heating Company, 186 Wooster street, New York. Sept. 14

Two good, first-class TINNERS to make hand made assortment by piece work; must be good on wash boilers. W. F. Janeway, Columbus, Ohio. Sept. 14

At once, a first-class TINNER and PLUMBER; must be an experienced all around man; steady job to right man; state wages expected. Thornton & Freeborn, Randolph, N. Y. Sept. 14

A good all around man who understands and can do TINNING, PLUMBING and STEAM HEATING; must be strictly honest and sober and able to help in store at times; steady job and good wages to right man; none but experienced men need apply; answer, with reference, Louis Stanton, Frostburg, Md. Sept. 14

Wanted, three or four men who are able to do CORNICE WORK and METAL CEILING WORK; men who can handle both lines preferred. Apply at once, S. Keighley Metal Ceiling & Mfg. Company, 819 Locust street, Pittsburgh, Pa. Sept. 14

A good all around man for country work who is a practical TINNER and PLUMBER; must be absolutely sober, reliable, a hustler, and look after store at times; steady employment year around to right party; no lost time; married man preferred; give references and state wages wanted. G. W. Vandeveer & Son, Springfield Center, N. Y. Sept. 14

A TINSMITH who understands furnace work and jobbing in plumbing; none but a competent man need apply. G. W. Minor, Waterbury, Conn. Sept. 14

A TINNER who can do some steam heating and a little plumbing; state wages; job open at once. W. O. Houck, Bangor, Pa. Sept. 14

Several good CORNICE MAKERS on inside and outside work; only steady and reliable men need apply. Henry E. Wieber, Kingston, N. Y. Sept. 14

A first-class TINNER, one who is especially good on furnace work; eight hours, good wages and steady work to the right man. Robert Jahn, Scotch Plains, N. J. Sept. 14

Two TINSMITHS wanted at once; sober; state age and wages expected. James Fitzgibbon, Red Bank, N. J. Sept. 14

A first-class, sober and steady TINSMITH for a first-class shop situated about 40 miles from New York City; we will pay good wages and give steady employment to a man that can do our work; must understand range and furnace work and be capable of cutting patterns; we must have a neat and smart mechanic; state age, married or single, and wages wanted. "W. M.," care *The Metal Worker,* New York. Sept. 14

A first-class SALESMAN, acquainted with the building and contracting trade of New York and vicinity. "New York," care *The Metal Worker,* New York. Sept. 14

A good all around man at TIN WORK and PLUMBING. John Hovell & Son, 979 Avenue D, Bayonne, N. J. Sept. 14

First-class CORNICE and SKYLIGHT MEN; some for outside and for inside work; eight hours. The G. Drouvé Company, Bridgeport, Conn. Sept. 14

SALESMAN that thoroughly understands soliciting steam and water heating for small shop; will give half the profits to right party; no expenses or salary given. "Homer," care *The Metal Worker,* New York. Sept. 14

A PLUMBER of ability; one accustomed to estimating on new work; permanent position to the right man. Apply John Revett, 19 Wright street, Newark, N. J. Sept. 14

Two good CORNICE MAKERS and one TINSMITH; wages $2.50 per day to good all around men. Alfred Martin & Co., Rockford, Ill. Sept. 14

A first-class PLUMBER and GAS FITTER; none but first-class and sober men need apply. L. W. Joseph, Morgantown, W. Va. Sept. 14

Two or three CORNICE MAKERS for in and outside work; must be hustlers; good wages; apply at once, ready for work. Newburgh Cornice Works, Newburgh, N. Y. Aug. 31

SITUATIONS WANTED.

TIN PLATE, SHEET IRON and METAL CEILING SALESMAN desires position as traveling salesman or office man; have traveled through New York State, New Jersey and New England; age 26. "X. Y.," care *The Metal Worker,* New York. Sept. 21

By a young, single and steady man, as GENERAL JOBBER in tin and sheet iron, roofing, gutters and spouting, stoves and furnace work, pumps and iron pipe work, in or outside work; 15 years at the trade; wages $2 per day at steady work. J. H. Smith, 413 West Sixth street, Cincinnati, Ohio. Sept. 21

By two SLATE ROOFERS: 16 years' experience. Ramsey Bros., Hartman Hotel, Perth Amboy, N. J.

A first-class STEAM FITTER and a practical molder; can do gas fitting and iron pipe work for plumbing; am free; could begin at once. Thos. Nixon, Stroudsburg, Pa. Sept. 21

By young man, 25 years of age, temperate and reliable, single, five years' experience at PLUMBING, GAS FITTING, GENERAL JOBBING and work coming into a country shop; also some knowledge of tin roofing and spouting, range and furnace work; correspondence solicited. T. Ransom, Southampton, L. I., N. Y. Sept. 21

STEAM FITTER (first-class) as outside foreman; able to estimate, lay out work, take charge of erection of steam and hot water heating plants and power work; thoroughly versed in every detail of the business. "Steam," care *The Metal Worker,* New York. Sept. 21

By a first-class TIN and SHEET IRON WORKER; 18 years' experience, two years as foreman; at present employed but would like a change; would like to take charge of tinsmithing department of some large manufacturing company in or near New York City; strictly temperate and reliable; best of references; want steady job. F. H. Potter, 1372 Brook avenue, New York. Sept. 21

By a steady, sober, all around TINNER and SLATER; up to date on hot air furnaces, plumbing and pipe fitting, pumps, windmills, &c.; steady position desired. Frank Finley, Fifth and Broadway Hotel, Cincinnati, Ohio. Sept. 21

As FOREMAN, CUTTER or BENCH WORKER in a cornice shop by a man 36 years of age, in or near Greater New York. Adolf Klein, 303 East Fifth street, New York. Sept. 21

TINSMITH; first-class on brass and copper work; understand brazing. Chas. Smolensky, 186 Norfolk street, New York. Sept. 21

By an all around TINNER accustomed to inside and outside work and some knowledge of plumbing; steady position desired. Chas. Dutcher, 751 Superior street, Cleveland, Ohio. Sept. 21

As FOREMAN or CUTTER in tin, sheet metal, cornice, slating or general job work; position desired in the South; competent in all branches of the trade and capable of estimating; can give references from last employer. "Cutter, 921," care *The Metal Worker,* New York. Sept. 21

As PLUMBER'S HELPER; 1½ years' experience; city or country; steady position. Henry T. J. Brady, 825 Bedford avenue, Brooklyn, N. Y. Sept. 21

By an all around HEATING and SANITARY ENGINEER who thoroughly understands acetylene and gasoline machines; can make plans and superintend a large force of men; understands high pressure steam and mill work; good solicitor; can furnish A1 testimonials. "M.," Box 700, Milford, N. H. Sept. 21

By a first-class TINSMITH and ROOFER, Lewis Kronovetz, 404 East Tenth street, New York. Sept. 14

By good all around TINNER; am temperate and honest and can come at once. Box 247, Colby, Wis. Sept. 14

By SALESMAN with responsible stove foundry, heating or ventilating company; fully qualified; understand drawings and can estimate and superintend; 35 years old; any desired references. Wm. Hill, 417 Locust street, Philadelphia, Pa. Sept. 14

By young married man, position or business opening in retail or wholesale house; nine years' experience as bookkeeper, buyer and general manager in large plumbing, heating and roofing business, together with line of stoves, &c.; have reputation for honesty, ability and energy and can give best of references. "R. H.," care *The Metal Worker,* New York. Sept. 14

Steam and hot water heating apparatus, hot air furnace plants; SALESMAN and ESTIMATOR of many years' experience in New York City desires to change his position; competent as superintendent or manager; practical mechanic. "Heating," 160 Bleecker street, New York. Sept. 14

By PLUMBER with nine years' experience; first-class references; country preferred; wages moderate. "J. E.," care *The Metal Worker,* New York. Sept. 14

By a first-class METAL SPINNER; sober and steady; good all around mechanic; steady position. H. Melsterknecht, 217 East Eighty-fourth street, New York. Sept. 14

As TINNER or CLERK in hardware store; 16 years' experience in store or shop; good workman; sober; state wages; New York State preferred. Box 108, Wilmette, Ill. Sept. 14

FILER and FITTER would accept a job if offered at once; is sober and industrious. "J.," 42 Bradford street, Auburn, N. Y. Sept. 14

SALESMAN would like to travel and sell a line of stoves and hardware; prefer New York or Pennsylvania but would go anywhere; can sell anything that can be sold. "J. M. D.," 42 Bradford street, Auburn, N. Y. Sept. 14

As CUTTER and FOREMAN in cornice and sheet metal works. "L. M. N.," care *The Metal Worker,* New York. Sept. 14

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Well established. Doing retail-wholesale business; present owner is very desirous of retiring from stove trade. Will arrange special terms with right party for purchase within next 30 days. Address "HARDWARE BUSINESS," care *The Metal Worker*, New York.

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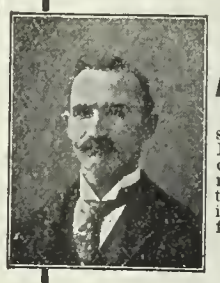

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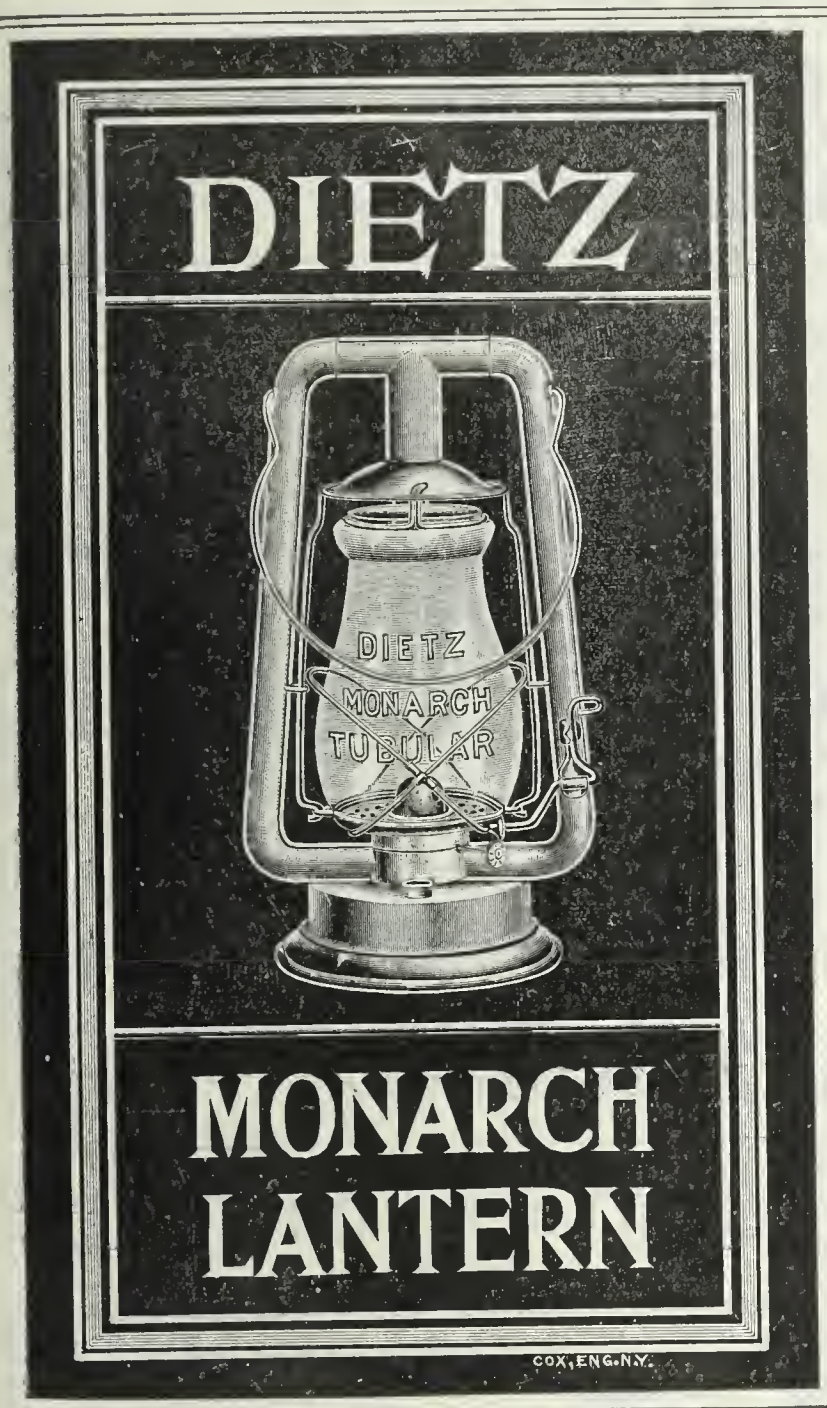

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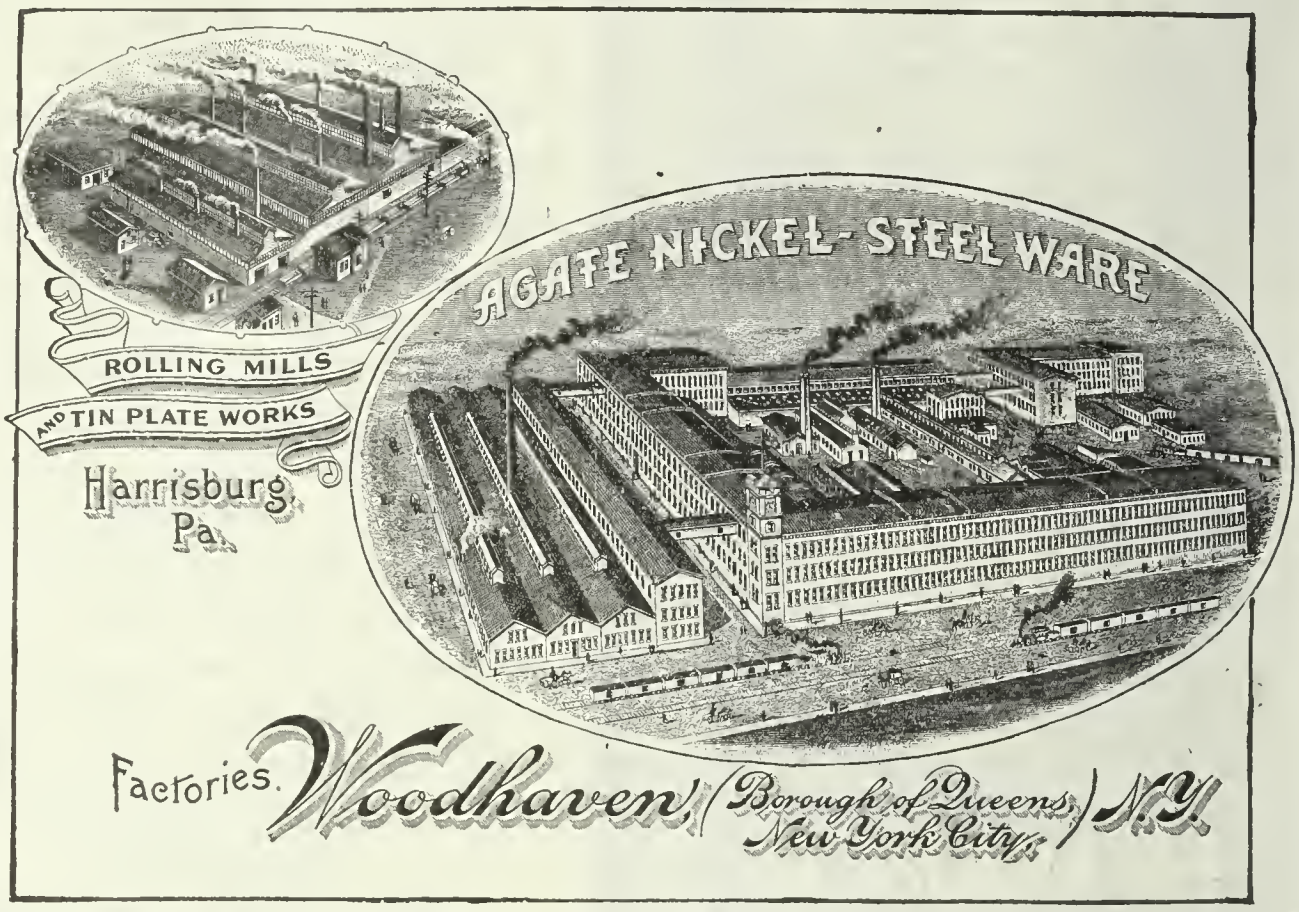
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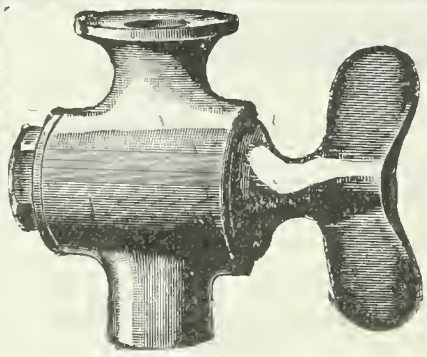

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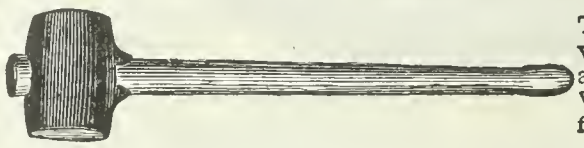

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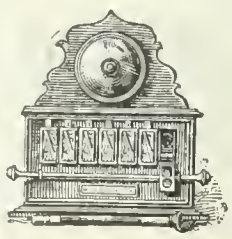

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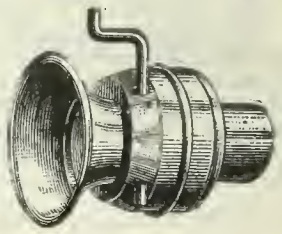

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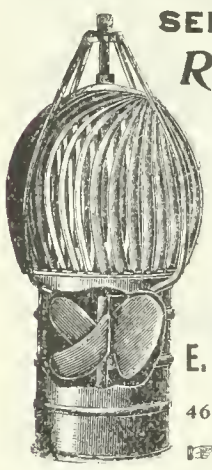

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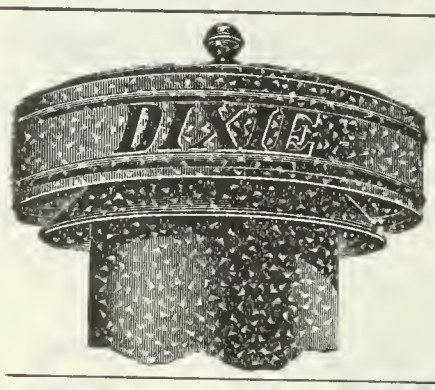

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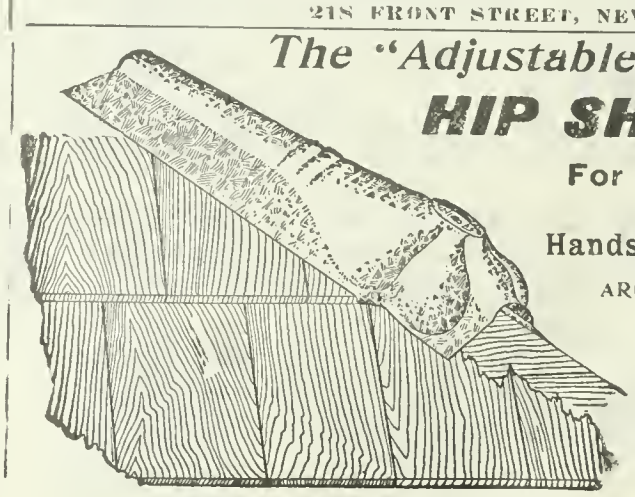

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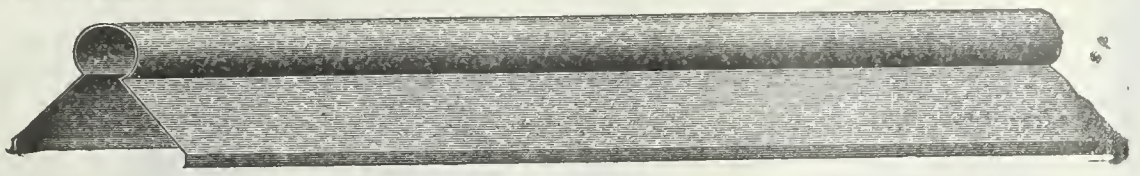

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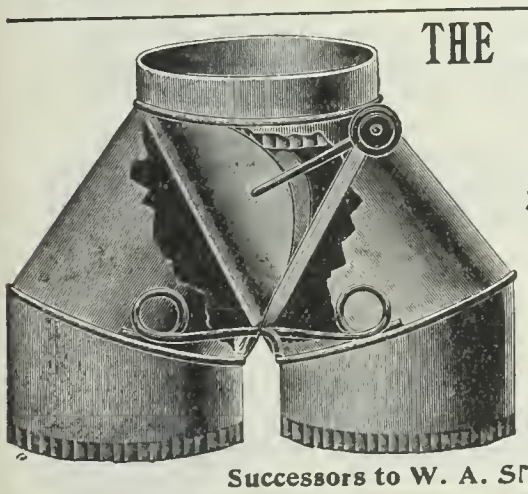

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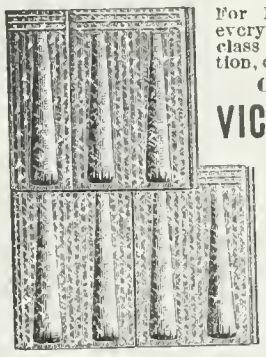

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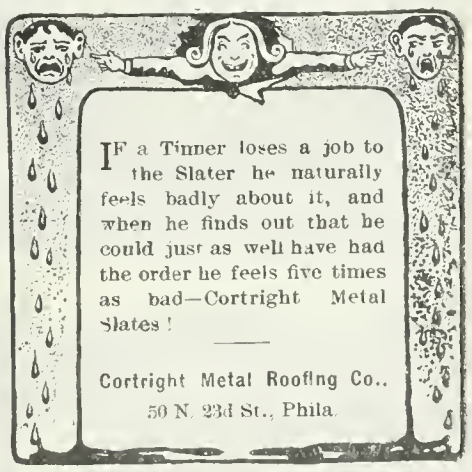

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Willie: "I guess Mabel's beau took it when he went home last night."

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"A short, funny tale," answered the little fellow.

"That's right," said the teacher. "Now, Johnny, you may write a sentence on the blackboard containing the word."

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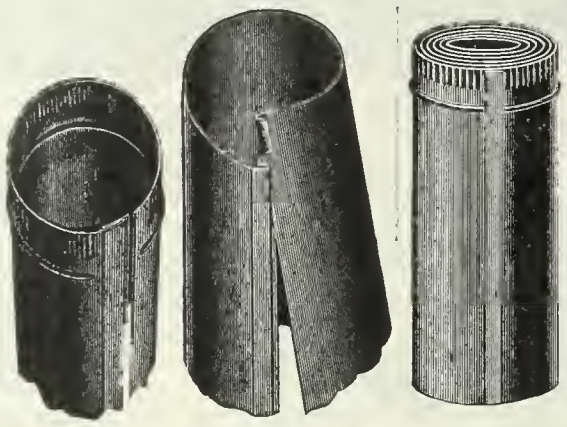

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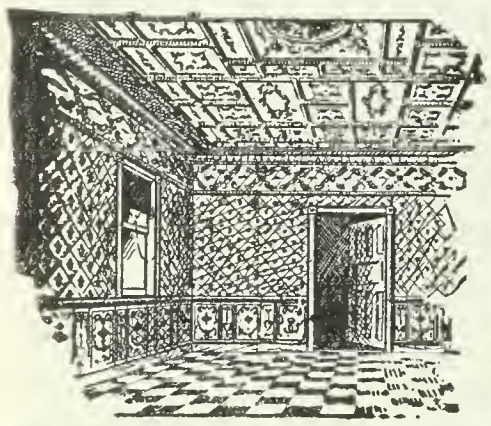

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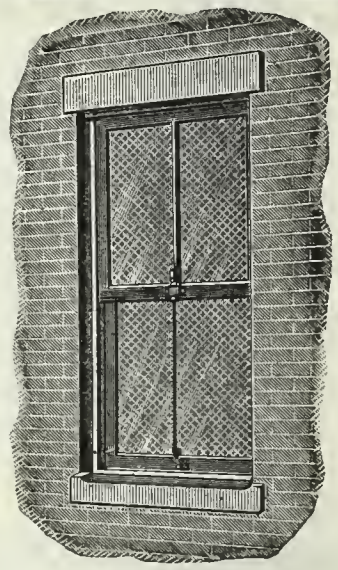

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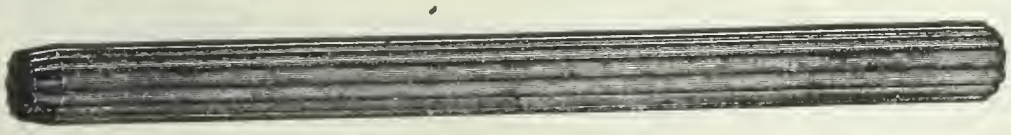

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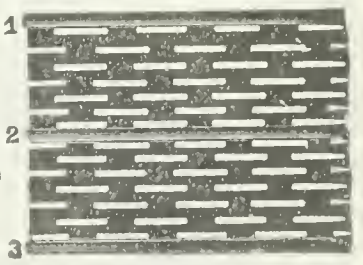

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SUMMARY OF CONTENTS.

I. Terms and Definitions—15 pages.
II. Drawing Instruments and Materials—13 pages.
III. Linear Drawing—6 pages.
IV. Geometrical Problems—35 pages.
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All Tinners, Cornice Makers and Sheet Metal Workers should be provided with a copy of

The New Metal Worker Pattern Book.

Price $5, post or expressage paid.

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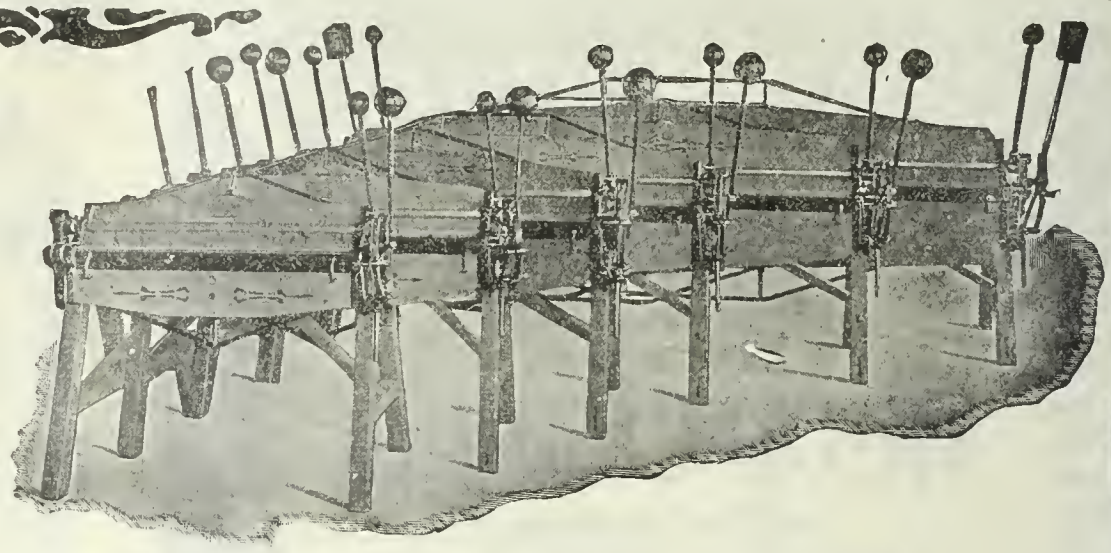
PUBLISHERS,
232-238 William St., New York

The Double Truss Cornice Brake.



All the different sizes in which we make this practical machine are herewith illustrated.

This brake costs only half as much as an all-metal brake.

It is made mostly of hard maple.

It is just as good as an iron brake in every respect—much better in some ways. Beside the 50% saved in the first cost our brake will save money in its use.

It is light and can easily be carried from place to place.

By shaping or bending work in the building where it is to be used all the trouble and expense of handling formed-up work is saved.

Write for prices.

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Would you be interested in the most practical Gutter Former? We have it and at a most attractive price. Write us.

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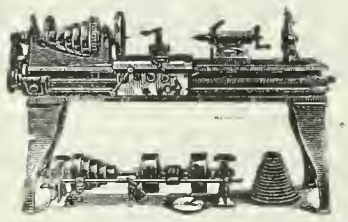

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Modern Second-Hand Machinery.

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METALLIC
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MADE OF TIN PAINTED OR GALVANIZED
ANY ONE CAN LAY THEM. FOR FURTHER
PARTICULARS, PRICES, ETC, ADDRESS THE
MANUFACTURERS.
THE CINCINNATI STAMPING CO.
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We build complete equipments and control the latest patented machines for this work.

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We make the very latest improved machinery for manufacturing cans and pieced tinware.

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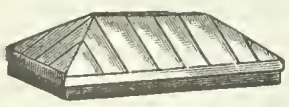

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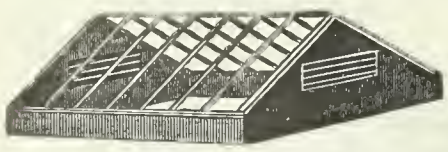

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Galvanized Iron Cornices and all kinds of Architectural Sheet Metal Work.
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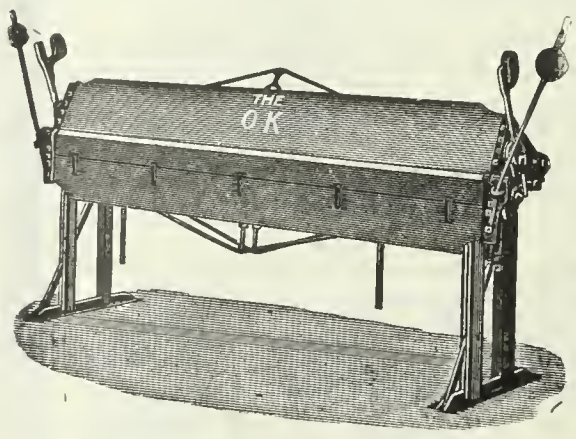

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No.	Gange it will Form Full Length.	Length on Forming Edge.	Price.
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2	16	10 ft. 1 in.	225
3	16	8 ft. 1 in.	150
4	22	8 ft. 1 in.	100
5	12	4 ft. ½ in.	75
6	16	4 ft. ½ in.	60
7	22	4 ft. ½ in.	50

Formers on cornice brakes included.

Discount and particulars on application. Brakes for steel range work or other specialties to form up material from 10 gauge up.

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Successors to O. K. MFG. CO.,

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TINNERS' TOOLS, MACHINES and SUPPLIES. Plumbers' Tools, Tinners' Hdwe., Soldering Flux, Sal Coppers, Rosin, Roofing Cement, Rivets, Bolts, Screws, Slaters' Tools, Second-hand Machinery and SKYLIGHT GEARING.

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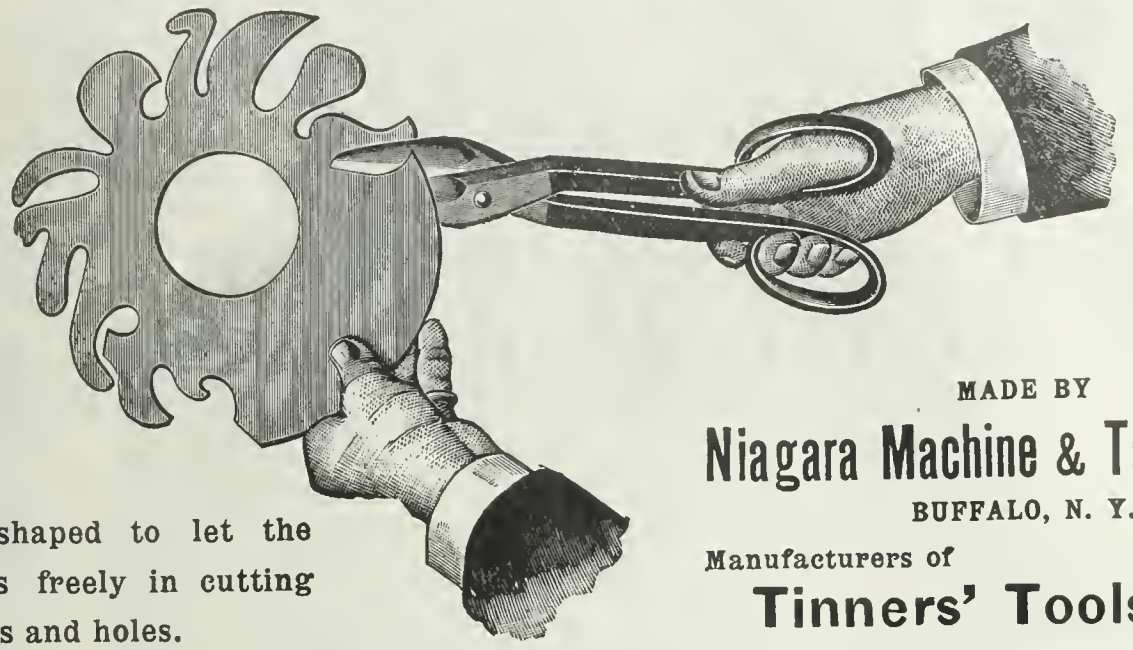

The jaws are straight like an ordinary Snips, but shaped to let the material pass freely in cutting scrolls, curves and holes.

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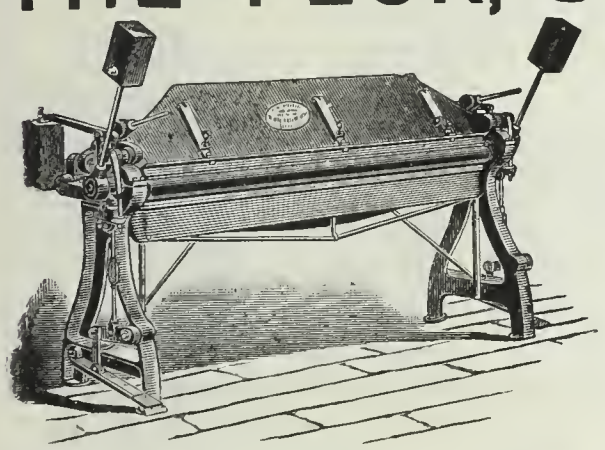

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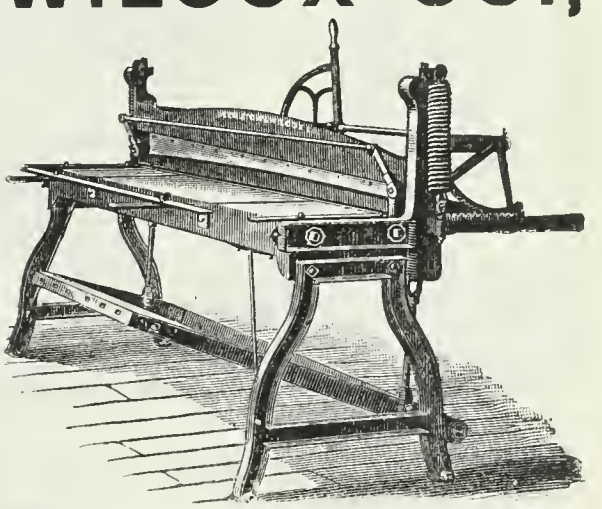
Hundreds sold and never a complaint. Works easily and rapidly. The universal verdict is, IT IS THE BEST IN THE WORLD.

96 inches long.

Our *Improved Eureka Cornice Brake.* Will bend No 20 iron.

96 inches long.



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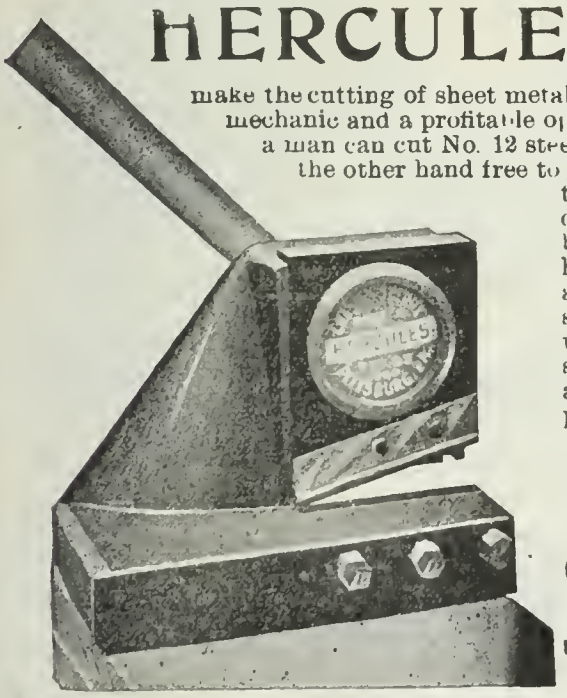
With Lever Arc, Automatic Gauge. Will cut No. 22 iron 97 inches long.

HERCULES SHEARS



make the cutting of sheet metal of heavy ganges an easy task for the mechanic and a profitable operation for the employer. With them a man can cut No. 12 steel with one hand of the lever leaving the other hand free to guide the stock while cutting elbows, ties and circles as small as 8 inch radius: this is done with out burring or buckling either piece, thus avoiding hammering and straightening which add to the cost of the product. The split sheets of any width or length up to No 12 gauge, cut wire or bar steel ⅛ inch thick, cut off and mitre angle iron ⅛ inch thick, and do it perfectly.

PRICE, - - $35.00.

Write for Discount.

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PRESSES and SHEARS, CORNICE PRESSES CURVED MOULDING MACHINES, etc.

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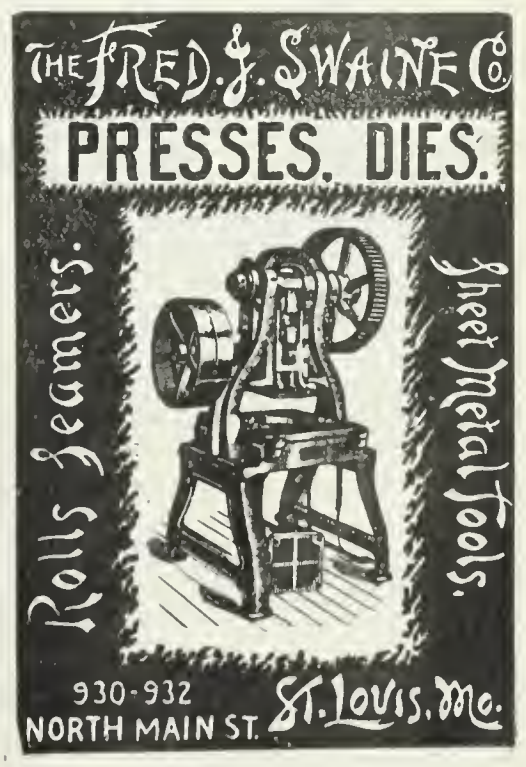

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20th Century Groover for Hand Power. We also make them for Belt Power.

20th CENTURY GROOVER, Handiest out.

Operated from one position. Automatic knock out and *Quick Return*. Grooves 22 gauge. Write for circular. Made by
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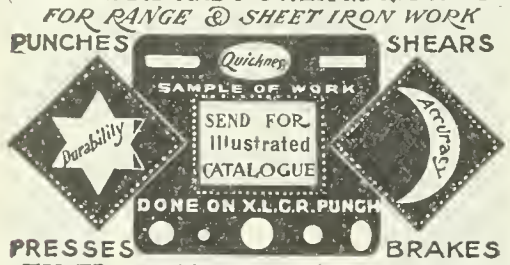
BEST HAND AND POWER MACHINERY
FOR RANGE & SHEET IRON WORK
PUNCHES SHEARS



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EXCELSIOR TOOL & MACHINE WORKS
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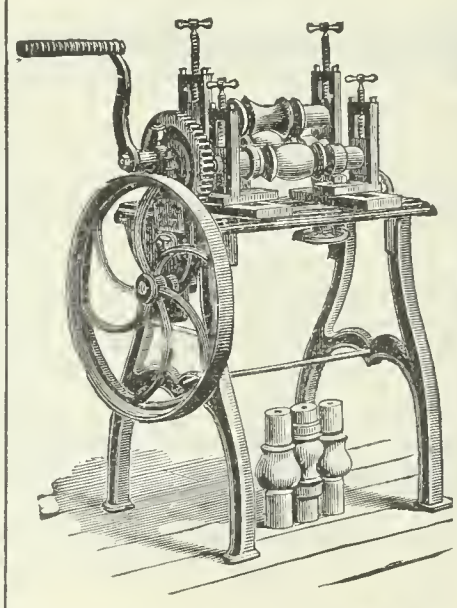

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Manufacturers of all kinds of

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ALL SIZES.)

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Punches, Presses, Sheet Steel Lath Machines, Drop Presses, Draw Benches, and SPECIAL MACHINERY of all descriptions.

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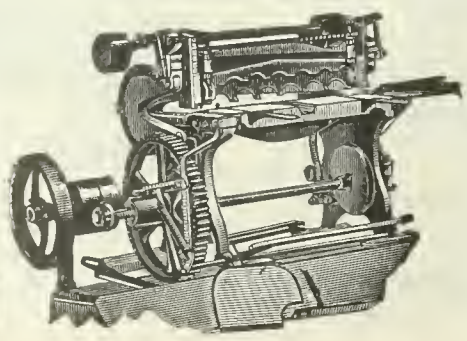
For Squaring, Trimming and Slitting No. 6 Or Plates and lighter Gauges. Made in Lengths up to 11 ft.



The most practical and powerful shear on the market. Has all improvements. Write for circulars descriptive of this and 100 other sheet metal working tools.

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Agents: MERCHANT & CO., Philadelphia, Pa.

— ENCOURAGING.—Tess: "There goes Ursula Hope with Jack Timmid."

Jess: "Yes, she's setting her cap for him."

Tess: "Do you really think she cares for him?"

Jess: "Yes, indeed. You know her full name is Ursula May Hope. Well, she signs all her letters to him now: "U. May Hope."—*Philadelphia Press.*

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Professor Broadhead: "Spring fever, my son, is an all-absorbing desire to sit back and see other people work."—*Puck.*

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Easiest to Operate, Strongest and Best.

SHEET METAL WORKING MACHINERY OF ALL KINDS.

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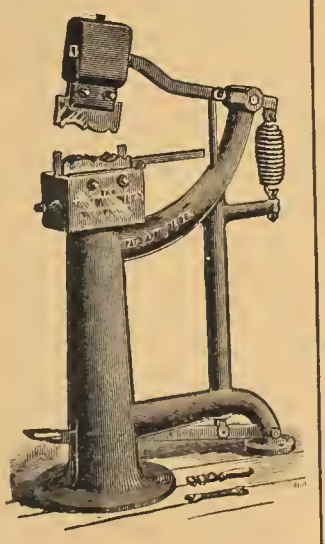
CURVE MOULDING HAMMER.
The cheapest, most convenient and best sheet metal moulding former ever offered. Produces a greater variety of work than any other. Quickly adjusted and easily operated. Write for prices and discounts on this or any sheet metal working tool you may desire. We will name you bottom prices.



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Soft and Cold Rolled Sheet Copper
For Roofing and Cornice Trade, all sizes and weights.
SOFT SHEET COPPER
30 x 60 in. and 48 x 72 in., from 1 lb. to 12 lbs. per square foot, for Coppersmith's use.
TINNERS' AND COPPERSMITHS' SOLDER.

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Patent Automatic Can Body Double Lock Seaming Machines.

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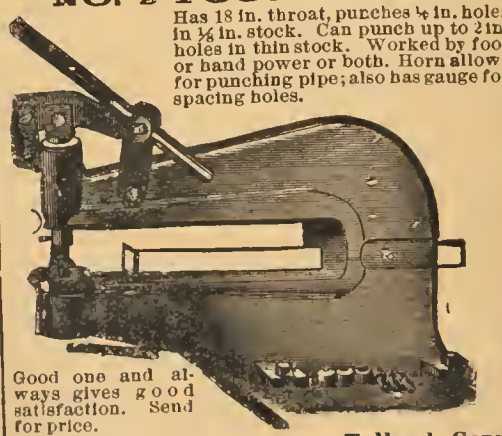
NO. 2 FOOT PRESS
Has 18 in. throat, punches ¼ in. holes in ¼ in. stock. Can punch up to 2 in holes in thin stock. Worked by foot or hand power or both. Horn allows for punching pipe; also has gauge for spacing holes.



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Browne: "O! No. That's just like Bull. He always did get the cart before the horse."—*Ex.*

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Oven Capacity

is one of the principal requirements in a modern range This is increased 50 per cent. in the

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With Steel Oven,

by baking on oven bottom and oven rack at same time.

NO CHANGING OF FOOD NECESSARY.

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We Solicit Your Orders

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Sept., Oct. and Nov. Shipments.

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200 lbs.
190 lbs.
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Galvanized Sheet Iron,
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A Popular Heater.

The Glenwood Hot Water Heater is unanimously approved and praised by dealers in heating goods because of new and practical improvements, especially **the one piece construction** which is acknowledged a great talking point over other boilers which are made in sections and sooner or later burn out and leak at the joints. Write for catalogue.

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Manufacturers of Tin Plate,

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Index to Reading Matter, Page 68.

Index to Advertisements, Pages 70 - 72.

The Metal Worker

A WEEKLY JOURNAL OF THE ROOFING, CORNICE, STOVE, TIN, PLUMBING AND HEATING TRADES.

With which is Incorporated The Stove and Tin Trade Journal, the Sheet Metal Builder, and Metal.

VOL. LVI. NUMBER 13. | NEW YORK AND CHICAGO, SEPTEMBER 28. 1901. | ONE DOLLAR A YEAR. SINGLE COPIES 5 CENTS.

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HIGH GRADE. LOW PRICE.
Also **Plastic Iron Stone Stove Lining**
In Bags or Barrels. Send for Prices.

The Gorton Side Feed Boilers
FOR STEAM AND HOT WATER HEATING.
INVESTIGATE FOR YOURSELF.
Send for Catalogue and Prices.
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On the four larger sizes of the Paragon Furnace, the grate is placed on ball bearings. The steel balls used are a little over an inch in diameter, and are accurately ground to fit into their bearings. Even when the fire pot is full of fuel this grate can be easily shaken by means of the upright lever.

This point means that a child can manage the grate of the largest size Paragon Furnace, and that what is often a disagreeable task is rendered easy and pleasant.

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Apollo is perfect and workable; others less perfect and far less workable.

Apollo jobbers carry large stocks and get anything special immediately.

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New York

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GREAT FUEL SAVERS are
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328-330-332 Second Ave.,
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The best made Sheet Copper and Copper Bottoms at lowest mill price. Manufacturers Roofing Tin Plates.

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All working parts renewable without taking the valve from piping. All parts interchangeable. Guaranteed not to leak at high pressure. Send for circular.
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RELIEF and ELEVATOR VALVES, STEAM TRAPS, STEAM AND WATER REDUCING VALVES, TANK TEMPERATURE CONTROLLER and A No. 1 DAMPER REGULATORS
NOISELESS BACK PRESSURE VALVES, PUMP GOVERNORS, STEAM and OIL SEPARATORS.
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Suitable for high or low pressure. Take no more room than an ordinary air cock. Endorsed by the leading steam experts as the best made and the quickest working. All genuine stamped with our Trade Mark.
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READ OUR "AD"
Page 22.
MAGEE FURNACE CO.,
Boston.

ROUND OAK
Standard of America

Unsolicited Letter–Published by Permission.

Salt Lake City, Utah,
June 4, '01.

Heat and Ventilating Department

Estate of P. D. Beckwith,
Dowagiac, Michigan

Gentlemen:

We have just sold eight *Round Oak* Furnaces.

This makes eleven this week, which we think is pretty good work, considering the fact that the *Round Oak* is not a cheap furnace.

When we put in a *Round Oak* furnace, it is the same as selling a *Round Oak* stove: All the work we have is to make the sale, after that the owner does the rest.

We will forward specifications for ANOTHER CARLOAD of *Round Oak* furnaces in a few days.

Yours very truly,

Geo. H. Scott-Strevell Hardware Co.

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THESE ARE TRADE GETTERS.
BUT THEY DO NOT COMPARE WITH THE FREE ADVERTISEMENT
GIVEN BY PLEASED CUSTOMERS—SELL GOOD GOODS.

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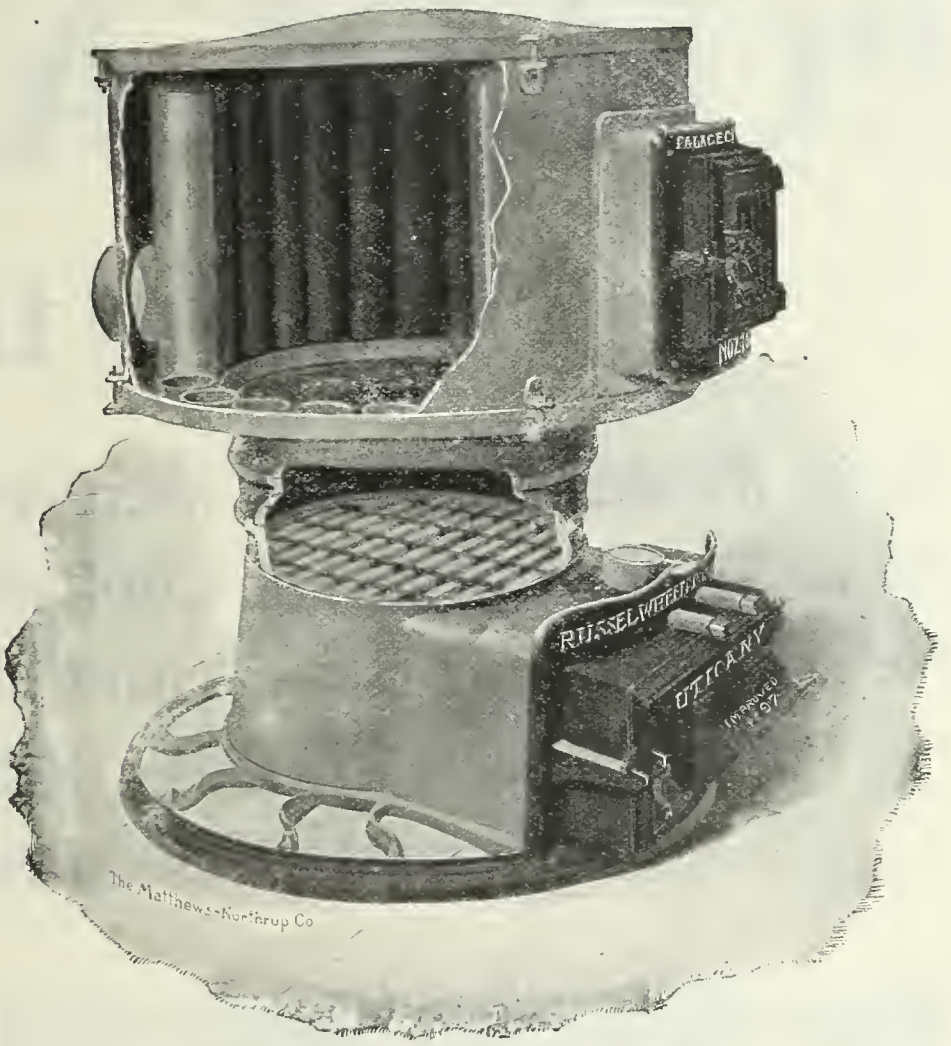

A peculiarly efficient heater of original design. The arrangement of wrought iron tubes and large combustion spaces secures

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RADIATING SURFACE.

CONVINCE YOURSELF.

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BOSTON, NEW YORK, CHICAGO, DENVER.

First Prize Paris, 1900.

Nothing too

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New Models of Steel Ranges.
New Models of Steel Cooking Stoves.
New Models of Base Burners.
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New Models of Sheet Iron H

More New and Desirable Patterns

Our New Catalogue is y

The Michigan S

Largest makers of Stove

DETROIT. CHI

WORKS AT DETROIT, MICHIGAN.

Good for

AGENCIES

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New Models of Cast Ranges.
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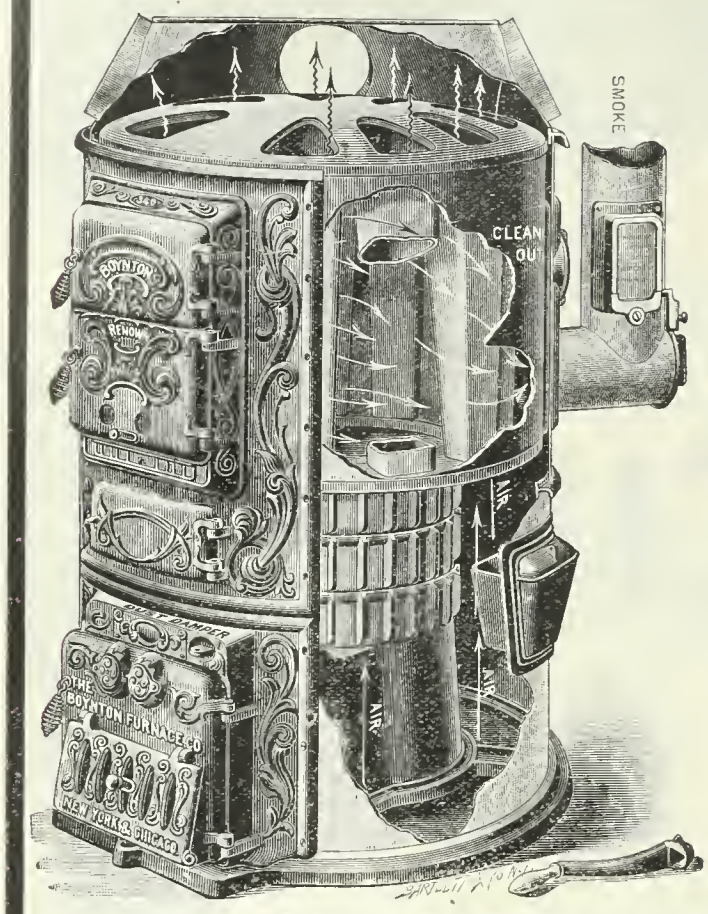
BOYNTON'S "RENOWN"

PORTABLE FURNACE



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Notice construction of cast iron heating flues, each one directly over and in contact with fire. Can we mail you catalogue and prices?

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The Monitor Base Burner

High Art Series.

Positively the most powerful Heater made.

Most novel in construction.

Embodying more salable features than any other.

Possessing greater heating circulation than any other.

A thoroughly up-to-date heater.

Send for complete description.

Secure the agency at once.

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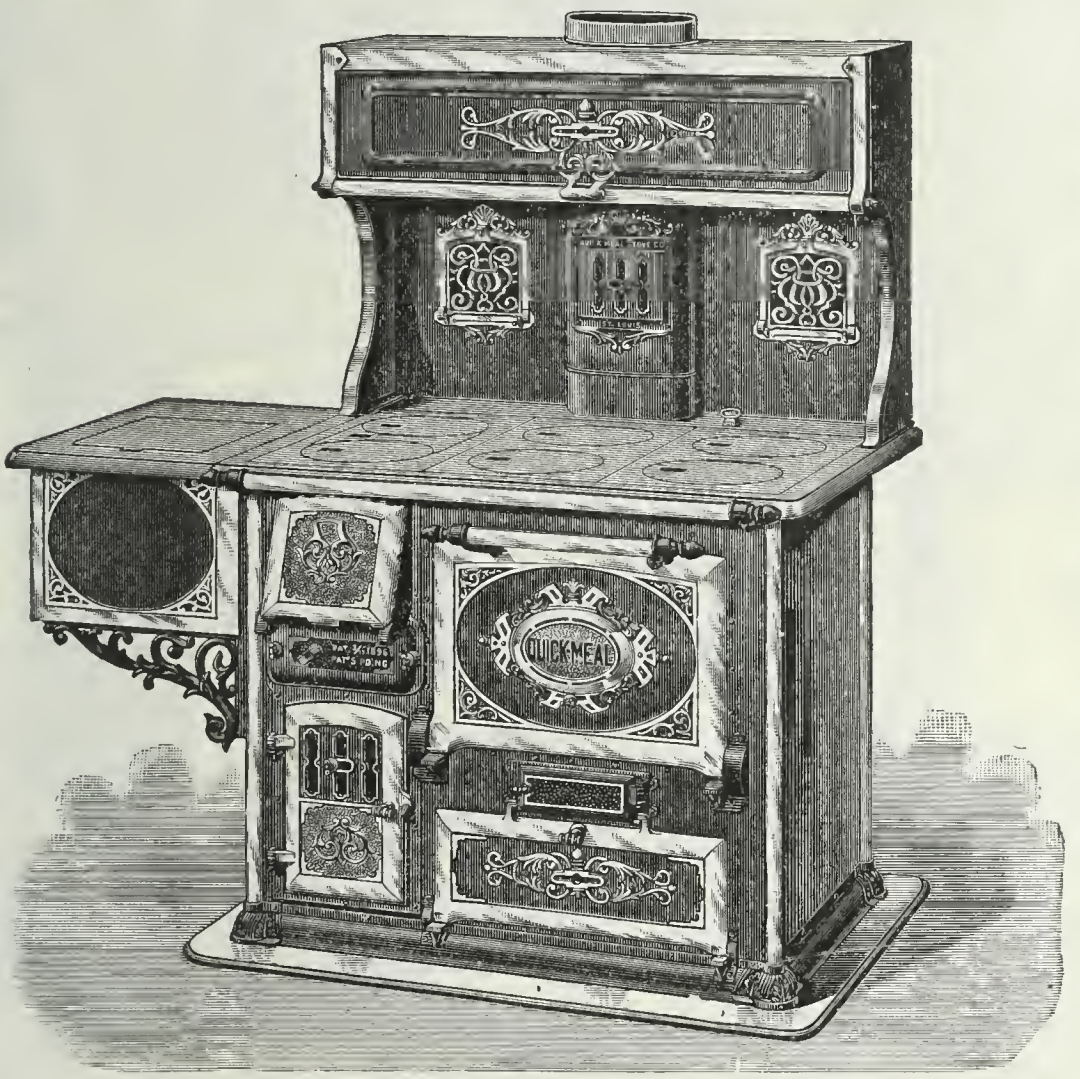
U. S. A.

QUICK MEAL



"Quick Meal" Steel Ranges have been thoroughly tested and are a pronounced success.

Make a close examination of their heavy triple asbestos filled outside walls, the weight of the material used in the oven plates and the manner in which they are braced, which makes them absolutely warp proof; see the Reservoir used on the "**Quick Meal**" **Range**, and the way it is made without dampers and nothing to interfere with the working of either the Range or Reservoir; simple, durable and good looking. Look at the general construction of the "**Quick Meal**" **Steel Range**, its proportions, its materials, its design and the mechanism and taste used throughout in its make-up, and the dealer will see why it will pay him to make the "**Quick Meal**" **Steel Range his leader.**

RINGEN STOVE Co. SAINT LOUIS

MILLER RANGES

ARE THE REAL THING
AT POPULAR PRICES.
ALL STYLES, ALL SIZES.
SECURE THE
AGENCY

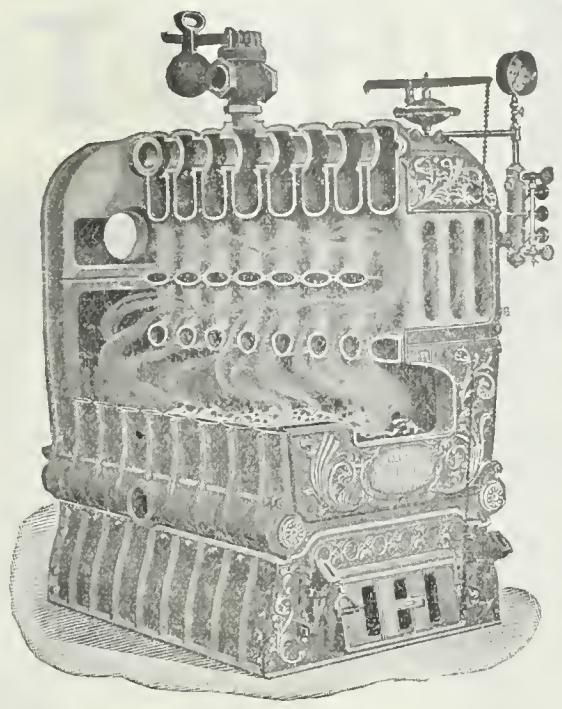
BY WRITING FOR
NEW CATALOG
AND PRICES.

The Wm. Miller Range & Furnace Co.,

Nos. 125 and 127 East Fifth St., CINCINNATI, OHIO.

WALKER BOILERS

FOR WATER OR STEAM.



The most powerful, economical and compact boilers made. They have given perfect satisfaction wherever installed.

The fireboxes are deep, and keep fire well. The grates are triangular, with rocking grates in the larger sizes if preferred. The flues are well arranged, and are easily reached for cleaning. The sections are united by push nipples.

We will gladly send catalogue, and solicit correspondence.

Walker & Pratt Mfg. Co.,

31-35 Union Street, BOSTON, MASS.

THE FINEST FACTORY IN THIS LINE IN THE WORLD.

"Norman" Steel Range.

BUILT LIKE A WATCH.

ATTRACTIVE.

ECONOMICAL.

DURABLE.

In the "NORMAN" Range are embodied up-to-date features that sell stoves.

The Fire Box is Oval in Shape and of Goodly Dimensions.

Either Duplex or Dockash Grates can be used. Grates removable through end door without removing any fire box linings.

Send for Illustrated Catalogue descriptive of our full line of Steel and Cast Ranges and Heaters.

GALUSHA STOVE CO., Makers, - ROCHESTER, N. Y.

THE SMOKELESS

HOT BLAST

OHIO STOVE CO.

PORTSMOUTH, O.

Is an entirely new production. It is constructed on modern designs, and is perfect in every particular.

It has a fire pot consisting of thirty sections, each section weighing three pounds, or ninety pounds for the fire pot complete. This fire pot can be removed in sections without dismantling the stove or removing a bolt. Owing to the peculiar construction of this fire pot we will guarantee that this stove will radiate as much heat, from the base of the stove, as the ordinary hot blast will from the top. This fire pot is so constructed that the air is taken in at the draft door, circulated around the fire pot and passed into the fire through the sections, coking the fuel toward the center of the fire pot, and consuming all the smoke and gas. The life of a heating stove is measured by the durability of the fire pot. We give you a fire bowl guaranteed for five years, and absolutely proof against fire crack.

The grate is large, anti-clinker and ball bearing.

The stove has a large ash pan. Is mounted in 14 gauge steel.

Will save 20 per cent. of the fuel and hold fire thirty-six hours.

We can especially recommend the stove for burning slack coal.

WRITE FOR CATALOGUE AND PRICES.

M TRADE MARK

Moore's Air-Tight Heater

M TRADE MARK

Home, Sweet Home.

There is no place like home, and there's no home so comfortable as that which is furnished with a MOORE'S AIR-TIGHT HEATER.

This remarkable stove has now been before the American people for ten years, and has made a record for efficiency and economy which is unexcelled.

Joliet Stove Works

JOLIET, ILLINOIS.

JEWEL STOVES AND RANGES.

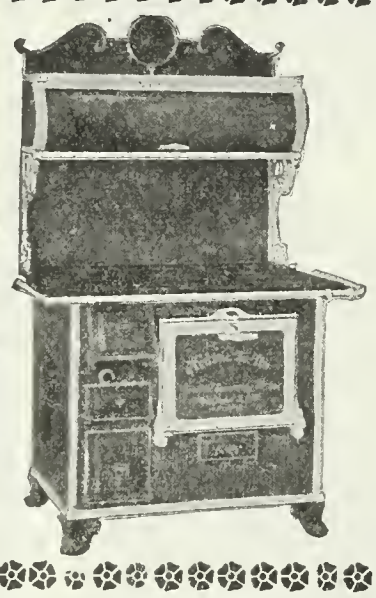
JEWEL STOVES AND RANGES
DETROIT STOVE WORKS
LARGEST STOVE PLANT IN THE WORLD

A Complete, Well Advertised Line; Low Prices and Good Workmanship.

Please Write for Catalogue.

DETROIT STOVE WORKS.

Detroit - Chicago.



Artistic Enameled Steel Ranges.

ALWAYS BRIGHT, NEAT AND CLEAN.

Do not confuse ***Artistic Enameled Steel Ranges*** with the ordinary black baked Japan used on other ranges.

The "ARTISTIC" is the only enameled range on the market.

You should see a sample. Can be washed with soap and water.

Artistic, practical ; the best steel range.

SEND FOR DESCRIPTIVE CIRCULARS AND CATALOGUE.

Artistic Enameling Works, - - St. Louis, Mo.

BRIGHTON AIR-TIGHT HOT BLAST.

Patent Applied for.

SOMETHING NEW!

THIS is not an every day "Air Tight Stove" that almost every stove foundry makes. While the general construction is the same, the principle is different.

This stove is furnished with a blow pipe fastened to inside of feed door and extends inside to the center of fire pot and is controlled by a screw register on outside of feed door.

DIRECTIONS FOR USING:

Close up all openings below feed door and regulate your fire entirely by screw register in the feed door.

By following these instructions you will produce more heat with this stove and consume less fuel than with any other stove made.

WRITE FOR PRICES AND SECURE THE AGENCY FOR THE BEST LINE ON EARTH.

JOHN A. SCHULTE & CO., Cincinnati, O., U. S. A.

Manufacturers of

Steel Ranges, Cast Ranges, Oak Stoves, Etc.

CLOVER TRIUMPH RANGES

Stand without a Rival

Observe the

Automatic Oven Shelf

(Patented Dec. 4, 1900).

A strong selling point. Indispensable for seasoning or basting. Is drawn out automatically in opening the door and released by a turn of the knob. Operates freely under a weight of 20 pounds or more.

---

3 Size Ovens,

Right or Left Hand.

16, 18 and 20 inches.

CLOVER TRIUMPH RANGES

embody ***improvements, individuality*** and ***labor saving devices*** not attainable on any similar goods of their class, and

PRICES ARE REASONABLE.

PHILADELPHIA STOVE AND IRON FOUNDRY,

1625 to 1635 N. 5th Street, PHILADELPHIA, PA.

AIR TIGHT HEATERS.

Our line in these comprises everything from the cheapest to the very finest finish possible to produce. Our manufacturing facilities and daily output justify us naming prices below any possible competition. This fact has enabled us to establish Wholesale Agencies in nearly every large city in the United States and makes it possible for us to supply the Dealer "Near His Door," saving time and freight. We also manufacture **Steel Ranges, Steel Cooks, Cast Ranges and Cooks, Hot Blast Coal Heaters, Oaks, Laundry Stoves, Radiators, etc.,** all up-to-date goods.

Write us for particulars and we will put you in the way of making some money.

EXCELSIOR STOVE & MFG. CO., · Quincy, Ills.

CATALOGUES SHOWING

GAS RANGES
CAST RANGES
STEEL RANGES
STEEL COOKS
HOT PLATES
CAST and STEEL HEATERS

WILL BE FURNISHED FOR THE ASKING BY

Enterprise Stove Co., VINCENNES, IND.

DEALERS, BUILDERS AND OWNERS

COLUMBIAN LINES.

Should secure our Line of Goods. They will then have the Best on the Market.

The Columbian Banner, Comet, Prince and Climax Furnaces, and the Columbian Peerless, Victor, Newport, Star and Triumph Ranges are all substantial, efficient and economical.

ALL KINDS OF WOOD AND COAL

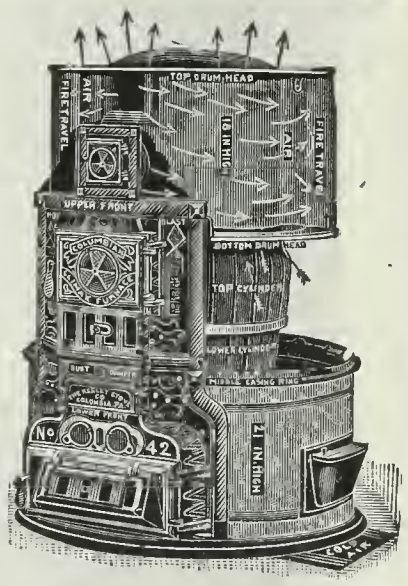
Airtights, Base Burners, Globe and Cylinder Stoves, Gasolene and Oil Stoves.

Write us for full information and catalogues.

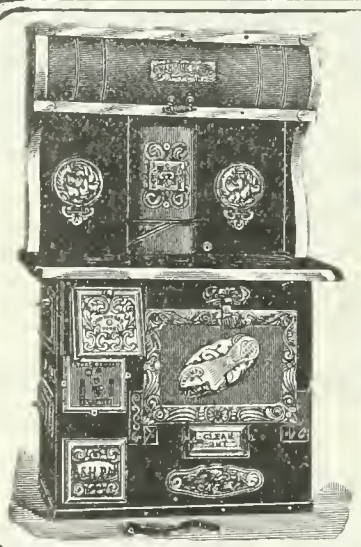
THE KEELEY STOVE CO.,

COLUMBIA, PA.

Chicago Branch: JACOB RETTERER, 167 and 169 Lake St., Chicago, Ill.



COLUMBIAN LINES.



STOP!

If you're looking for a Steel Range combining all the qualities which go to make an article of that kind desirable—

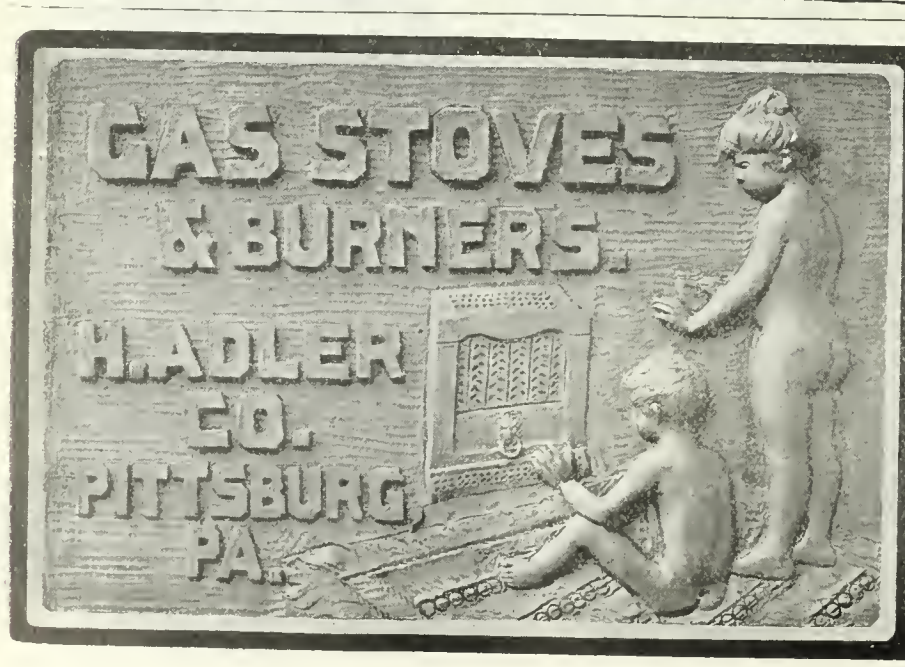
High Grade Materials and Workmanship,
Correct Construction, Operation Guaranteed,
Modern Design, Latest Improvements,
Low Price—you have it in the

Triumph Eclipse New "D" Series.

THE BEST LINE OF LOW PRICED RANGES ON THE MARKET.

The Eclipse Stove Co., Mansfield, Ohio.

Repositories at St. Anthony Park, Minn.; Omaha, Neb.; Denver, Col.



WRITE FOR
CATALOGUE
NO 34
THE MOST
COMPLETE LINE
FOR ALL GASES

BURRELL & FOWLER - CLEV'D O.

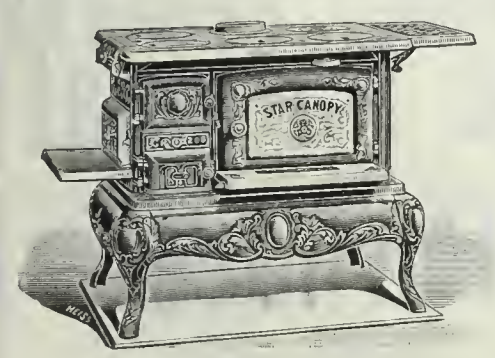
CANOPY RANGES LEAD ALL OTHERS

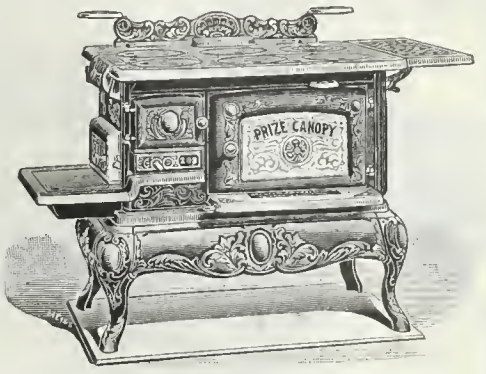
and are

POPULAR EVERYWHERE

A complete and distinct line of ranges

NEW and UNIQUE

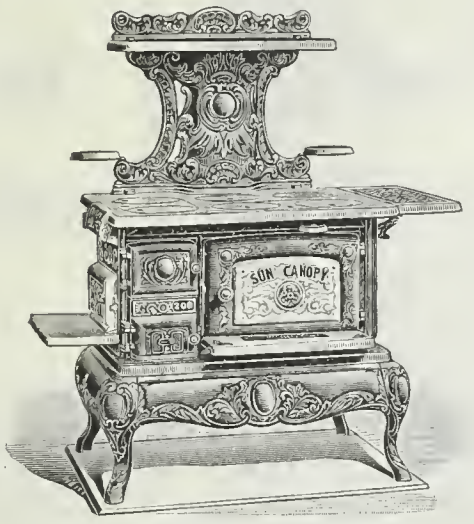




POSITIVELY
The Best Ranges for the Least Money.

WARRANTED
Of the Best Material and Workmanship.

WARRANTED
To Give Satisfaction in Operating.



FIRE BOX FIXTURES STRONG AND DURABLE.

THE STAR, SUN and PRIZE CANOPY RANGES

Furnished with or without TEA SHELF, HIGH SHELF, RESERVOIR, WATER FRONT, OVEN THERMOMETER, NICKELED STEEL EDGE FOR TOP OF RANGE OR HIGH SHELF.

SEND FOR CATALOGUE AND FULL PARTICULARS.

BUCKWALTER STOVE CO., = Box 10, = Royersford, Pa.

The American

M & D

Steel Range.

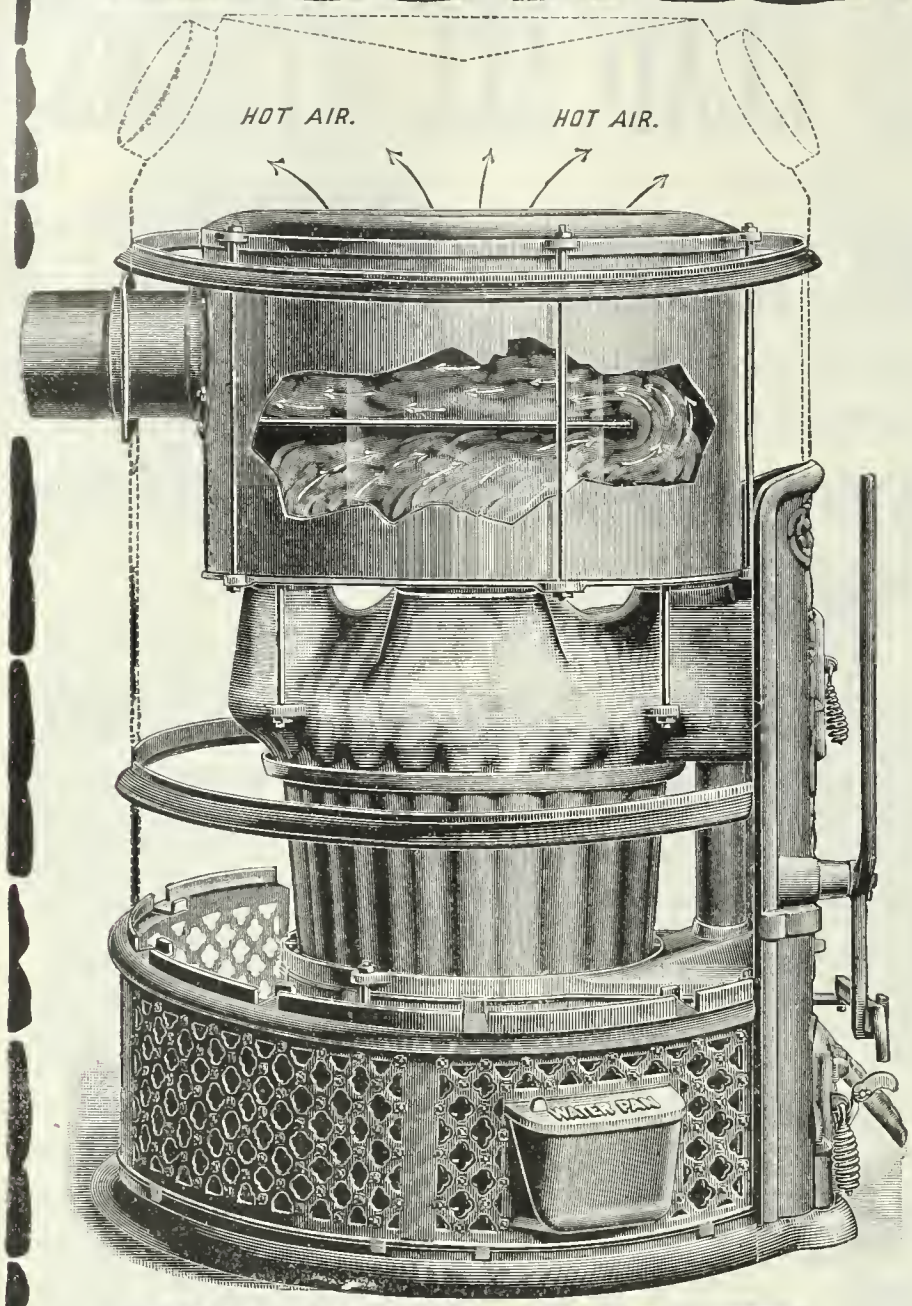
Made in Four Sizes, with ***White Enameled inside and out Portable Reservoir. Never Rust Out.***

The Dealer who sells cheap so called Steel Ranges made from stove pipe iron, will soon be out of the Range business.

M & D Ranges have a reputation for ***strength, finish, weight*** and ***durability*** They work ***perfectly. The U. S Government uses our Hotel Ranges on its war vessels.***

When you want ***Hotel, Double Oven, Family, Combination or Gas Ranges, Charcoal Broilers or Laundry Stoves,*** buy the *M & D.*

M & D RANGE COMPANY, 96, 98, 100 Lake Street, Chicago.



A WORD IN SEASON.

The National Furnace

(200 Series)

Has a Great Reputation

IT IS A

WONDERFUL HEATER.

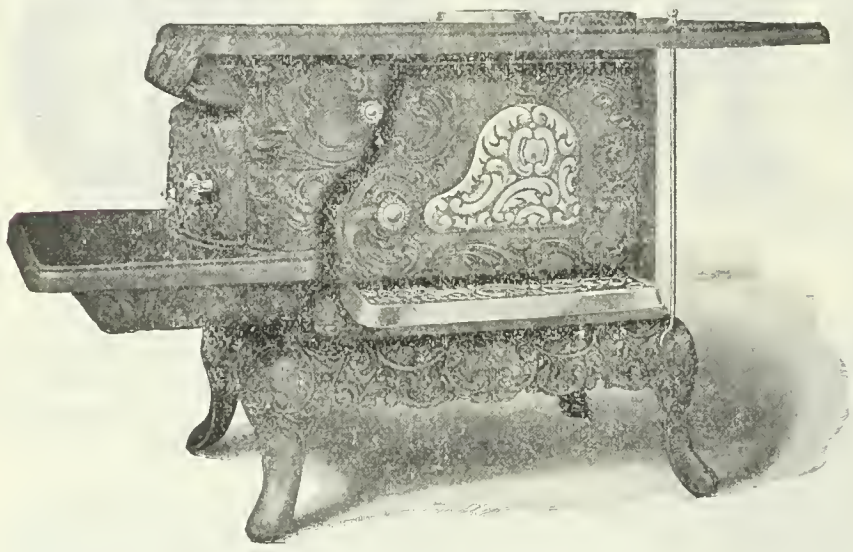
LOW IN PRICE.

DO NOT LET YOUR COMPETITOR GET THE AGENCY.

WRITE *TO-DAY* FOR BOOKLET.

Chas. C. Heath & Co.

BALTIMORE. PHILADELPHIA.



COOK STOVES.

AIR TIGHT

WOOD STOVES.

OAK STOVES,

HEATING STOVES,

FIRE PLACE HEATERS,

FURNACES.

SEND FOR CATALOGUE AND PRICE LISTS.

THE B. C. BIBB STOVE CO.

BALTIMORE, MD.

HIGH GRADE HEATERS.

Some Dealers Look

Is Made.

Is Wiped Out

to the profit they make on the sale of a single furnace, and if a cheap furnace is used the profit looks large when the contract

When this cheap furnace fails to heat, and gives out in the middle of winter, the dealer is obliged to alter and readjust the setting, secure repairs for his furnace, and in the end the entire profit

and great disgust follows to both the purchaser and the dealer.

OTHER DEALERS INSIST

on using

GOOD MATERIALS WORKMANSHIP FURNACES

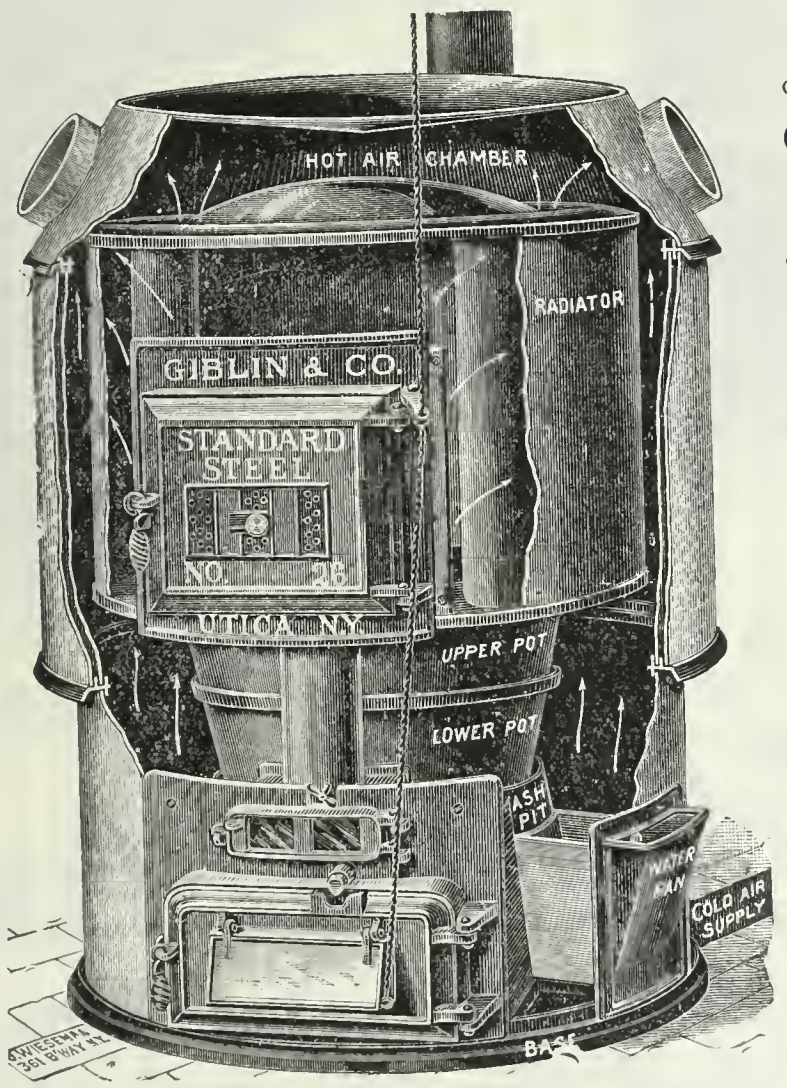
The result of such choice is satisfactory heating, pleasant feelings between the purchaser and the dealer, and the

WARMEST RECOMMENDATION

of the furnace and the dealer.

A GOOD BUSINESS REPUTATION

is obtained, and when good work is wanted this dealer is sought out and fair prices paid for his work.



The Basis

of all heating is a

Good Furnace,

one that is
SIMPLE in operation,
ECONOMICAL in fuel
and
LONG-LIVED
without the need of repairs.

The furnace shown here has all these merits, and the actual use of

Many Thousands

of these heaters has demonstrated its superiority.

FURNACE DEALERS

who are trying to establish a

Good Furnace Business

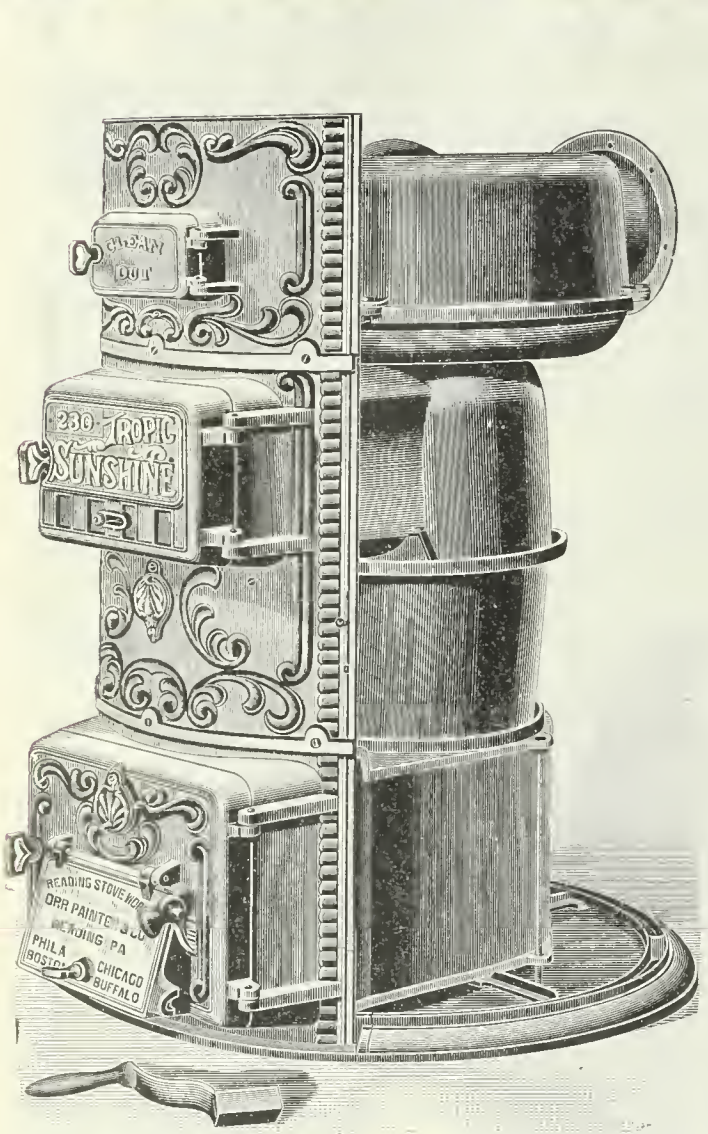
should place themselves in communication with us, obtain our catalogue, see the line of heaters we make and get in position to do business on a good basis for the balance of the year 1901.

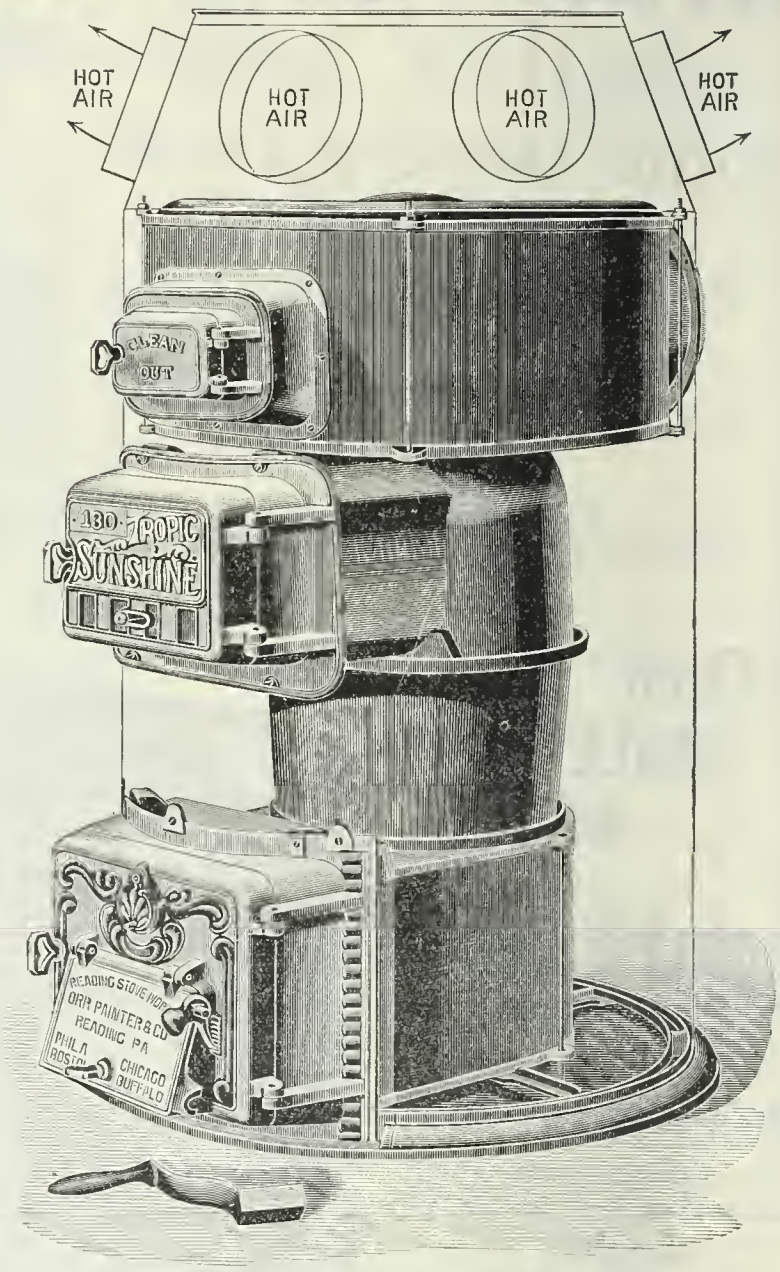
Our Prices are reasonable, and our treatment of our customers is

More Reasonable.

GIBLIN & CO., Utica, N. Y.

HEALTHFUL HEAT.





NEW LINE

TROPIC *Sunshine* FURNACE.

First-Class Furnaces at Reasonable Prices.

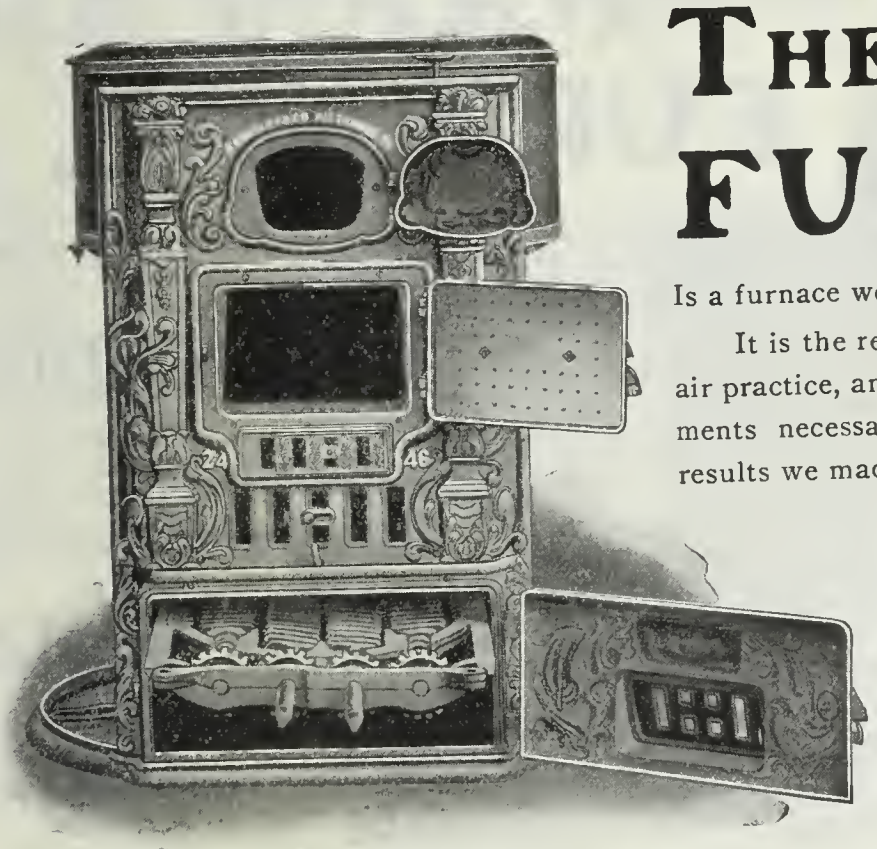
Full or Plain Front. Cast or Steel Radiators.

With or without Gas Ring. Triplex Grate.

The Reading Stove Works,--Orr, Painter & Co.

READING, PA.

BOSTON.	BUFFALO.	PHILA.	CHICAGO.
86-90 Canal St.	411 William St.	64-66 N. 2d St.	153-159 S. Jefferson St.



THE ETNA FURNACE

Is a furnace worth talking about and selling.

It is the result of twenty years' experience in hot air practice, and knowing the wants and the requirements necessary to produce successful, satisfying results we made the Etna accordingly.

The Etna contains many strong, practical features not found in the majority of others. We feel satisfied they will meet the approval of every dealer who has been up against the heating problem and encountered its difficulties. We have smoothed out some of the rough places.

READ THE CATALOGUE. SENT FOR THE ASKING.

Pittsburgh Stove & Range Company

PITTSBURGH, U. S. A.

IDEAL

BOILERS

1901

OUR NEW

Boiler Catalogue

NOW READY.

A postal card request will secure a copy...

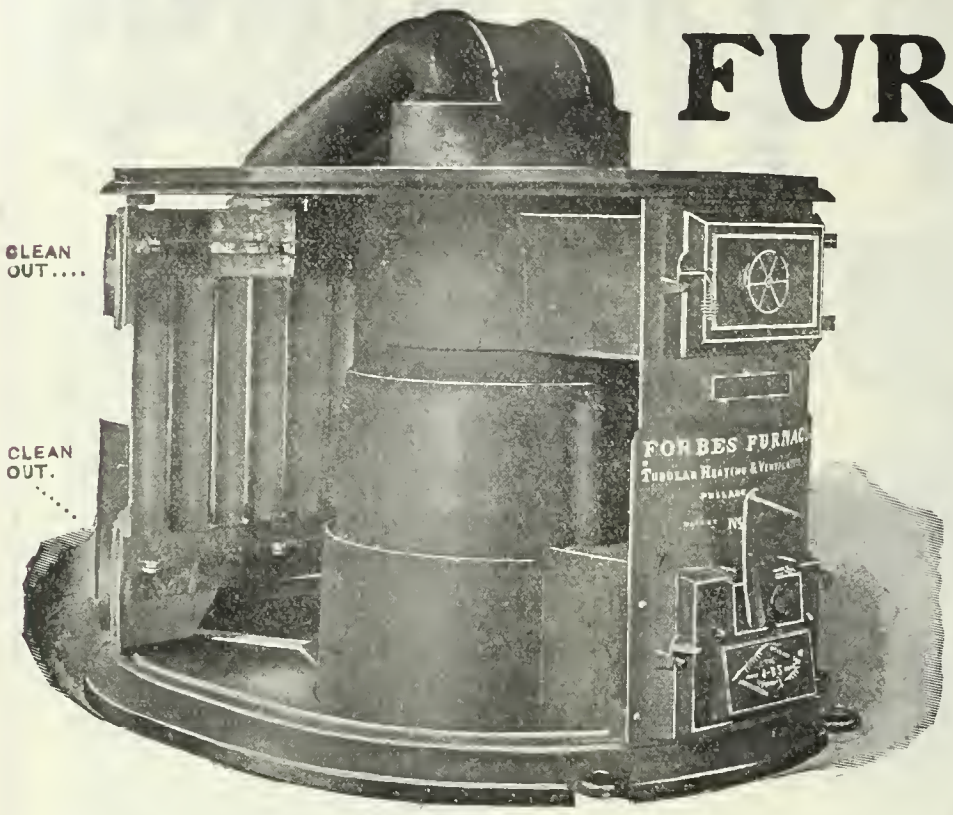
AMERICAN RADIATOR COMPANY

Lake and Dearborn Streets,

CHICAGO.

New York, Philadelphia, Buffalo, St. Louis, Minneapolis and Denver.

FORBES (IMPROVED) WARM AIR FURNACE.



ONLY 4 FEET 3 INCHES HIGH.

STEEL TUBES,

1-8 Inch Thick,

in radiator will wear for years. Our improvements for 1901 give us a perfect heater.

Triplex Grate.

PERFECT SHAKING. PERFECT DUMPING.

Each Bar can be separately replaced.

Forbes Furnaces, for Hard or Soft Coal,

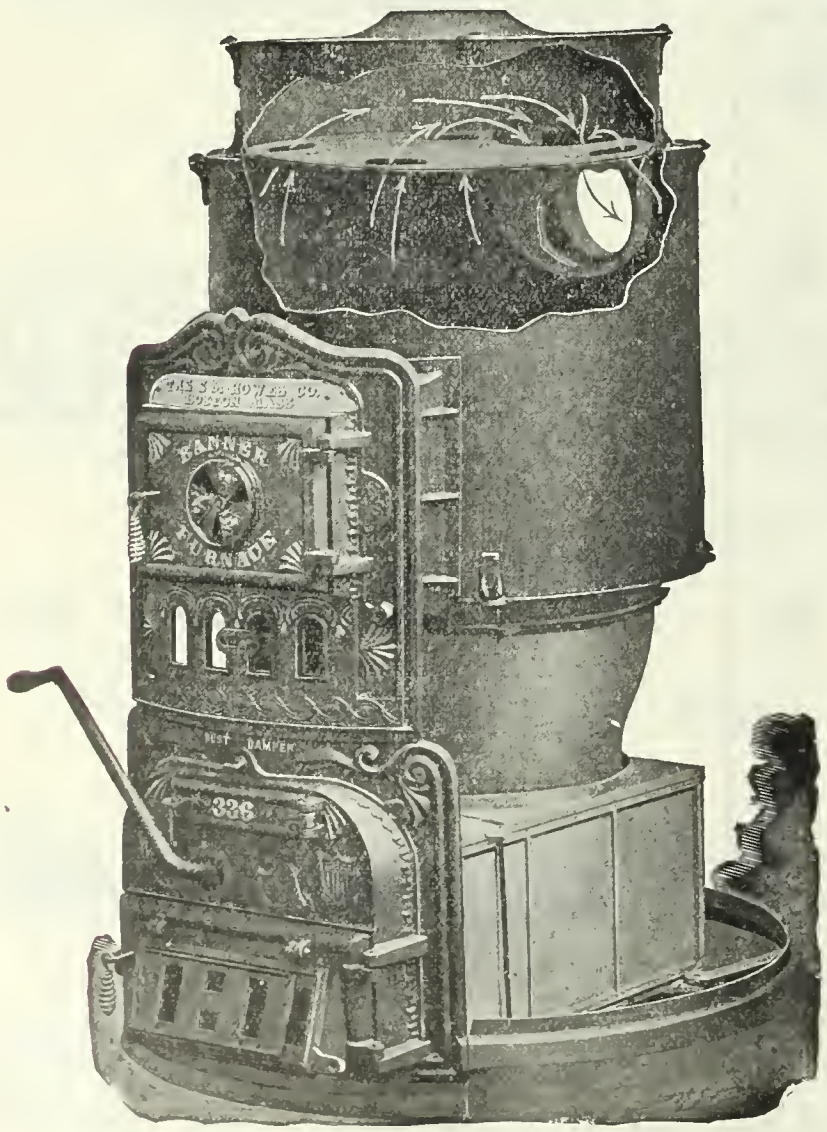
Save the heat others waste up the chimney and send it through the house, therefore reduce coal bills.

SEND FOR CATALOGUE AND PARTICULARS.

TUBULAR HEATING AND VENTILATING CO.

232 Quarry St., PHILADELPHIA, PA.

BANNER FURNACE IMPROVED FOR 1901



Deeper Ash Pit
Solid Front Shield
Triangular Grate

The original Banner Furnace has been universally acknowledged to be unexcelled as a heater. Banner Furnaces have been on the market eight years and have proven themselves strong and durable.

Time Tested

Modern Construction and Durable

Of Great Capacity

Very Low in Price

PUT A SAMPLE ON YOUR FLOOR

They are as Salable as Heating Stoves

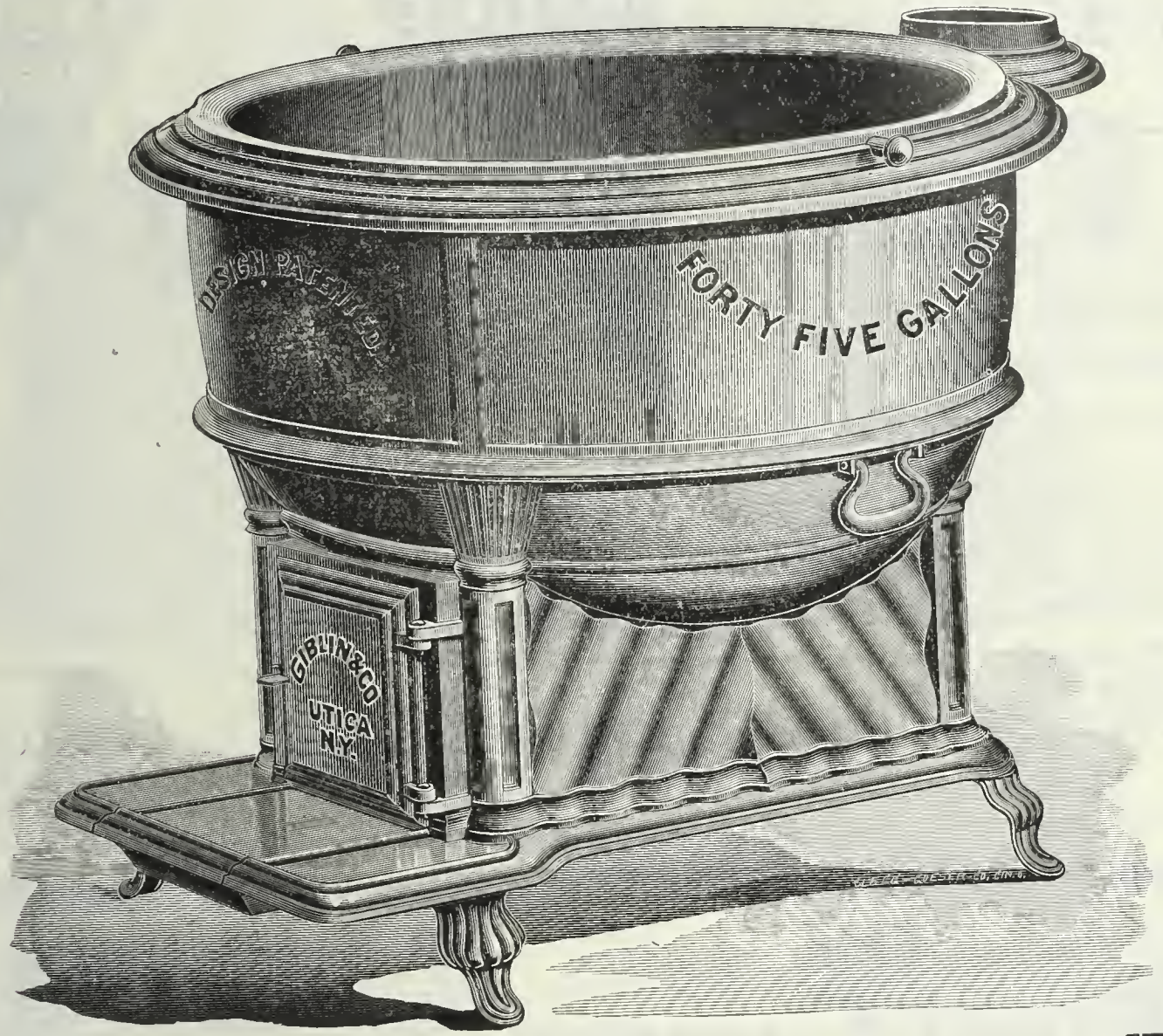
THE S. M. HOWES COMPANY

40, 42, 44, 46 Union Street

BOSTON, MASS.

FURNACE AND CALDRON

(PECKHAM'S)



Made in Seven Sizes for Burning Hard or Soft Coal, or Wood.

$\frac{1}{2}$, $\frac{3}{4}$, 1, 1$\frac{1}{2}$, 2, 3, and 4 Bbl.

Made from original patterns, finely finished, securing for the exterior castings a smooth, handsome appearance, and for the interior of the caldron a fine surface, perfectly circular; free from all unevenness of castings and finish.

The construction causes all the heat to be directed against the kettle and none wasted.

Doors are perfectly fitted and drafts enable the fire to be perfectly controlled.

These Furnaces and Kettles for many years have been the **Standard of Excellence** and there are none "Just as good."

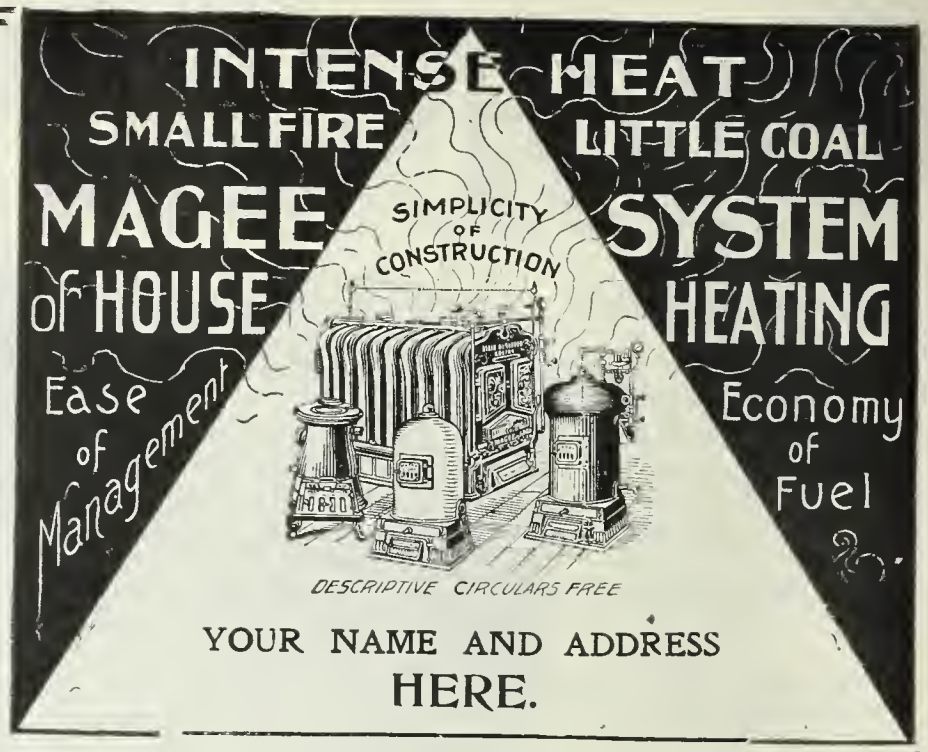
Shipments promptly made. All jobbers supply them.

GIBLIN & CO.,

UTICA, N.Y.

Send for Circular and Prices.

Want this Advertisement ?



We gladly furnish electrotypes of this and other advertisements to our customers. They may be used in newspaper advertising, or to print in circular matter or on stationery. They save ad-writing, typesetting and engraving. And they help get contracts. Proofs of other ads sent on application.

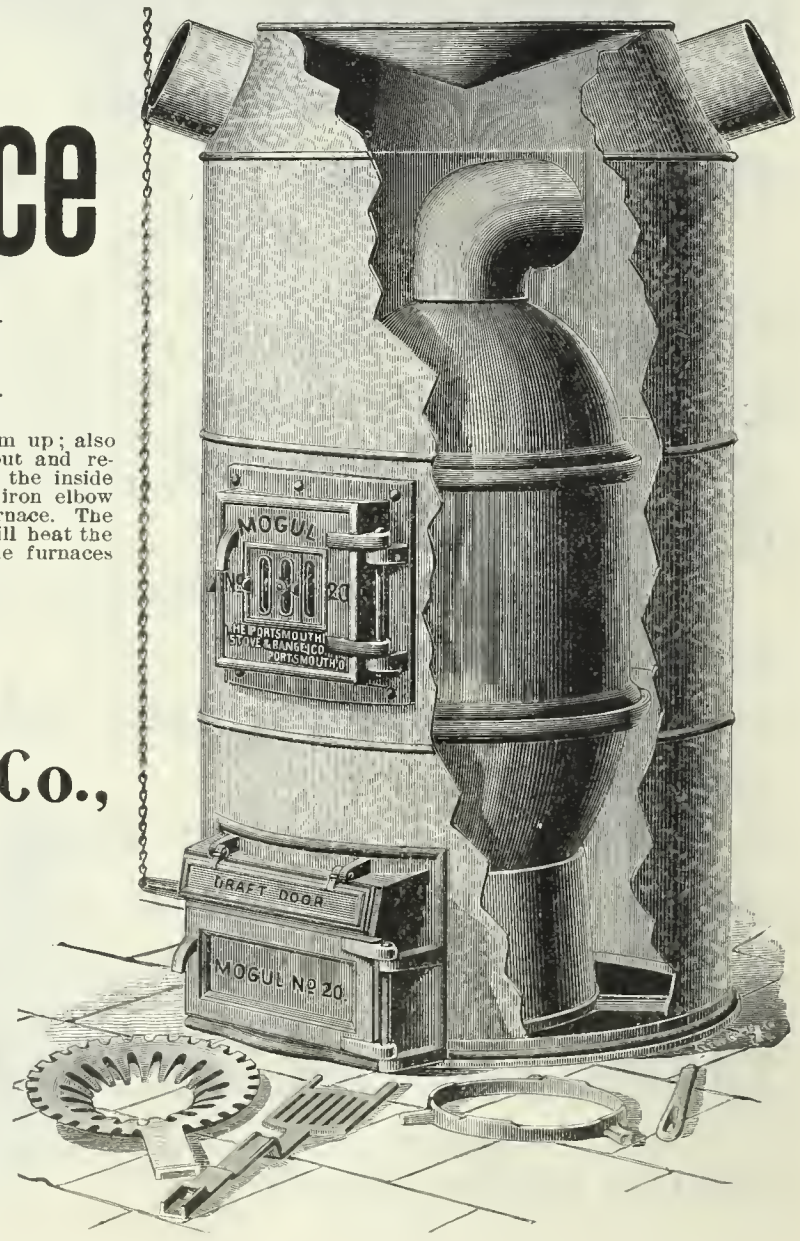
Magee Furnace Co., 32-38 Union St., Boston.

Makers of Highest Grade Heating and Cooking Apparatus. Received Gold Medal at Paris Exposition. Awarded Highest Honors also at Chicago World's Fair, Philadelphia Centennial, etc., etc.

THE Mogul Furnace

Diameter of fire pot	19½ inches.
Height to top of elbow	56 "
Height to bottom of pipe collar	46 "
Diameter of ring where casing fits	31½ "
Weight	800 pounds.

It is made with regular furnace joints for cement from the bottom up; also provided with draw center anti-clinker grate, which can be taken out and replaced through the ash pit. The fire pot has fingers at the bottom on the inside to assist in grinding up the cinder and cleaning the fire. A heavy cast iron elbow and cast ring for casing and one cast iron water pan is sent with each furnace. The "Mogul" is cheaper to operate than a hard coal base burner and will heat the house. It is plain, heavy and will do the work of, and outlast many of the furnaces on the market costing twice the money. Get our prices.



The Portsmouth Stove & Range Co.,

PORTSMOUTH, OHIO.

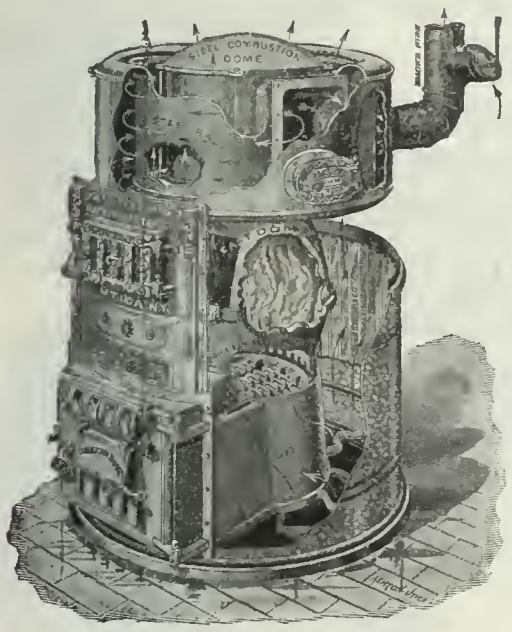
THE BUSIEST MAKERS OF STOVES & RANGES IN THE WORLD

MORLEY BROS., Saginaw, Mich.,

Agents for Northwest.

SUPERIOR FURNACES

Insure the greatest amount of heat for the fuel consumed. They are adapted to all climates and fuels, and embrace in their construction the latest and most improved features known to modern furnace building. ***BUY THE BEST.***



Superior Warm Air Heater.

POWERFUL HEATERS

ECONOMICAL IN FUEL

EASILY OPERATED

ABSOLUTELY FREE FROM DUST, GAS AND SMOKE

Ask for our new furnace catalogue and discounts.

New Superior Heater with Cast Radiator.

UTICA HEATER CO., Manufacturers, UTICA, N. Y.

CHICAGO HEATER & SUPPLY CO., 54 Dearborn St., CHICAGO, ILL., Western Managers.

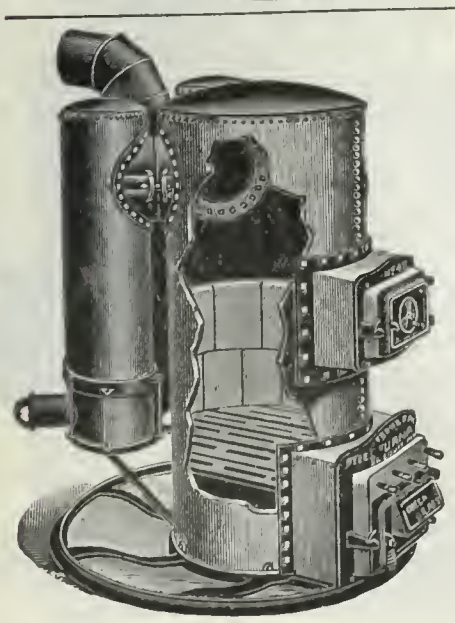
Apply All The Tests

to **Schill's Furnaces and Ranges,** and they will fill the bill every time. Whether the test be durability or economy of fuel, satisfaction to the user or salability. They never fail to meet every requirement.

Write for Catalogue and Prices.

THE SCHILL BROS. CO.,

CRESTLINE, O.



Front Rank Hot Air Furnaces

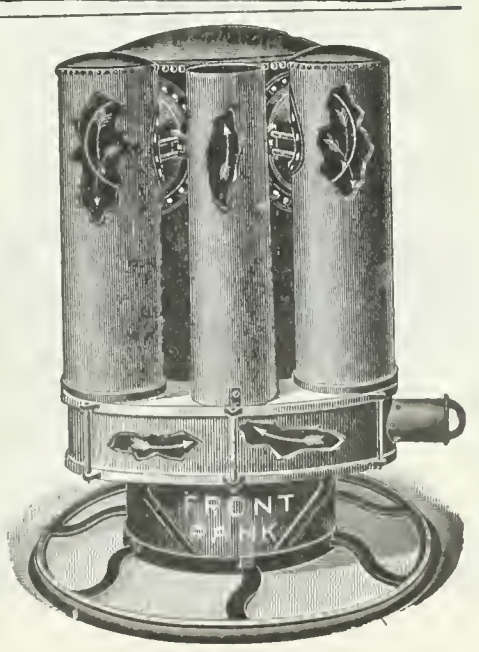
are built on vertical lines; air comes in direct contact with entire heating surface.

The Front Rank Fire Chamber is one solid sheet of closely riveted steel; being lined above the fire lines with genuine fire clay tiling it is the most durable made.

The radiators are very large and have an unusual area of heating surface in comparison with the size of fire pot.

These furnaces burn hard or soft coal or coke. We also make wood burning furnaces.

Send for our catalogue, it will give you a better idea of what we make.



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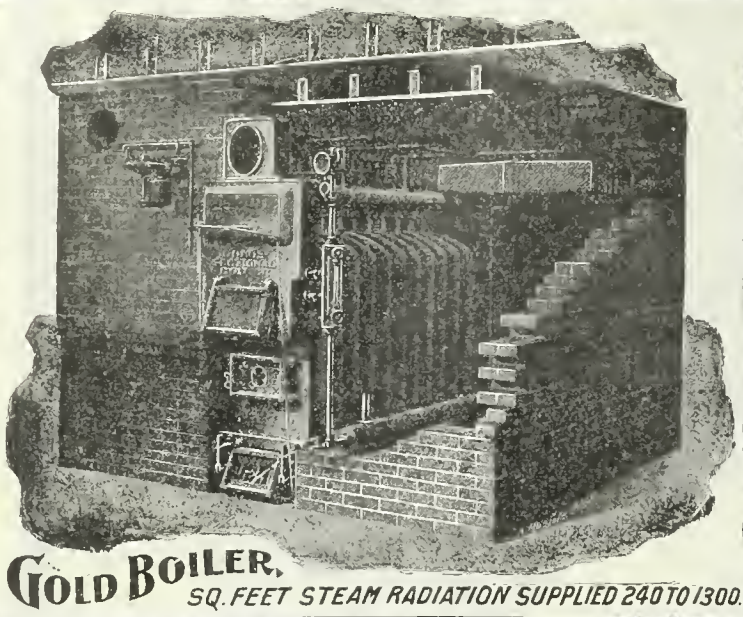

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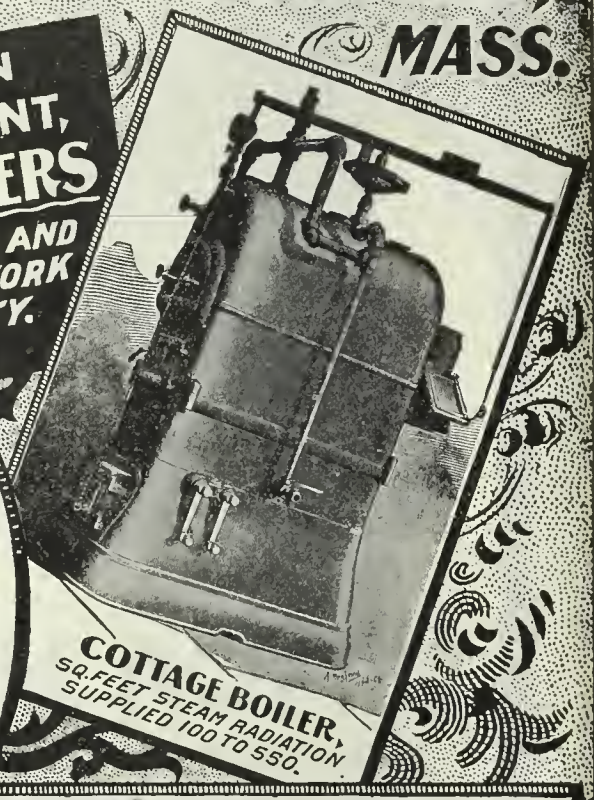

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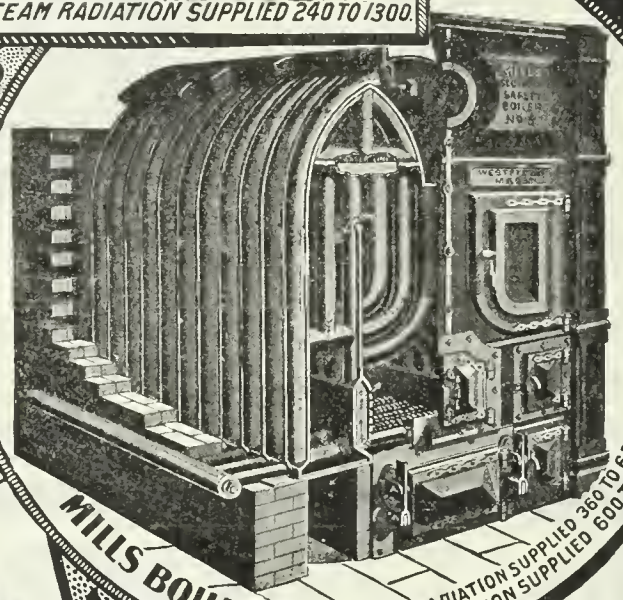

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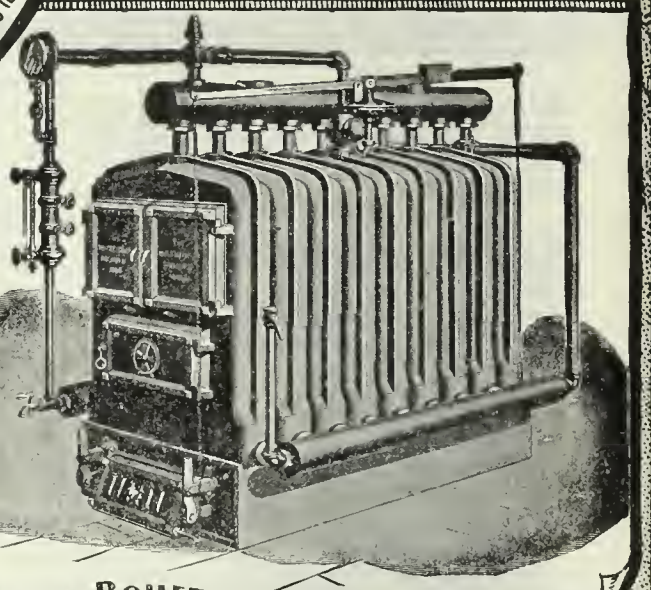

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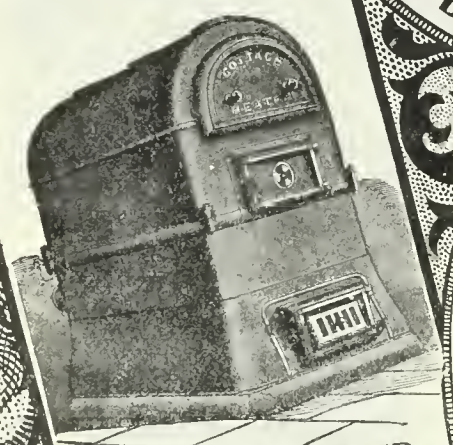

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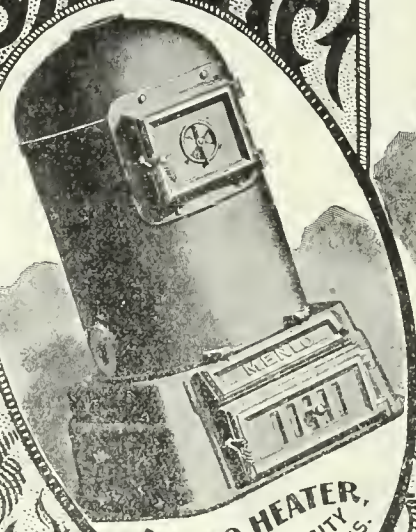

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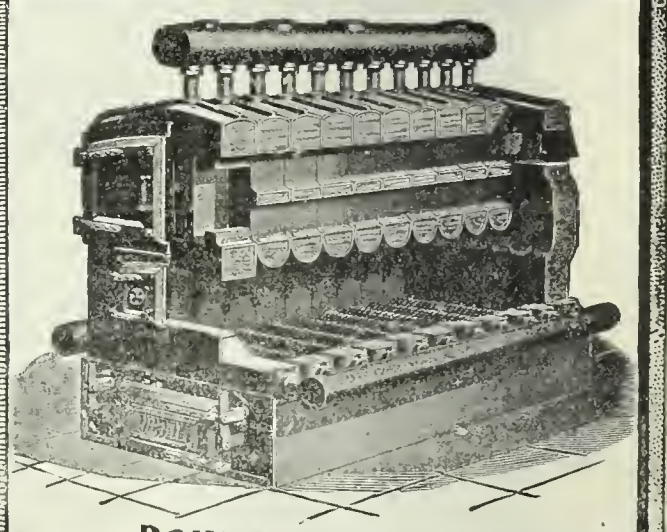

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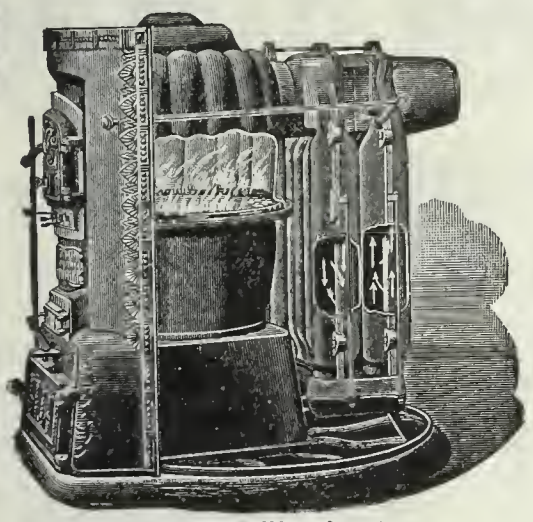

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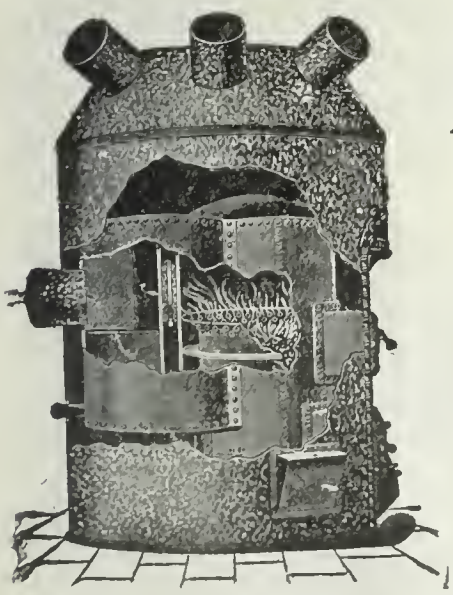

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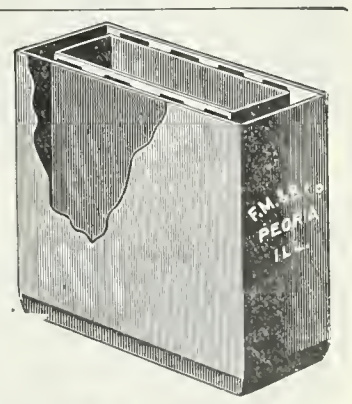

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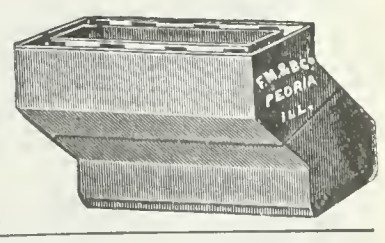

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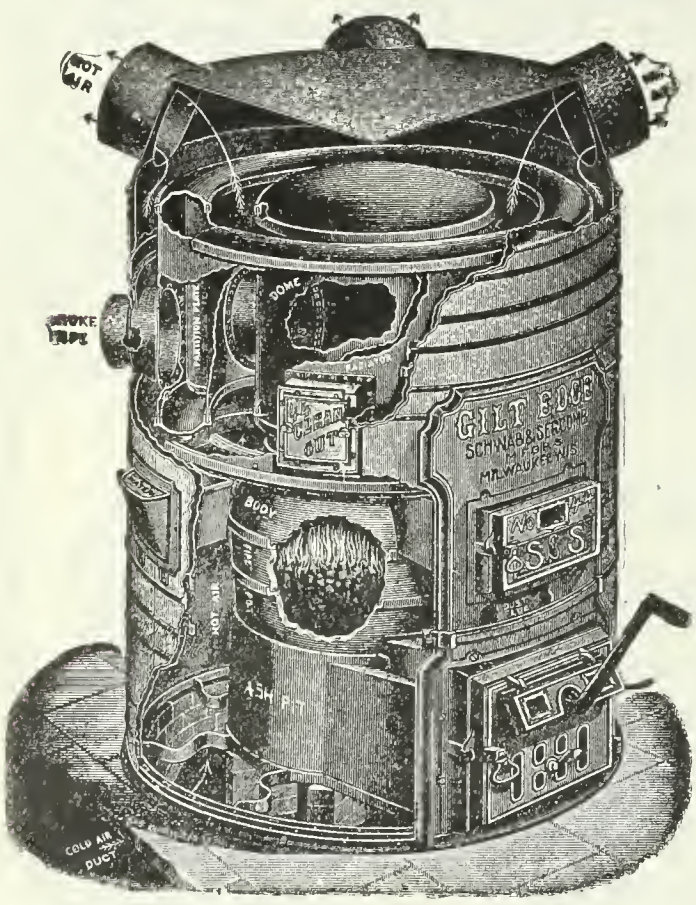

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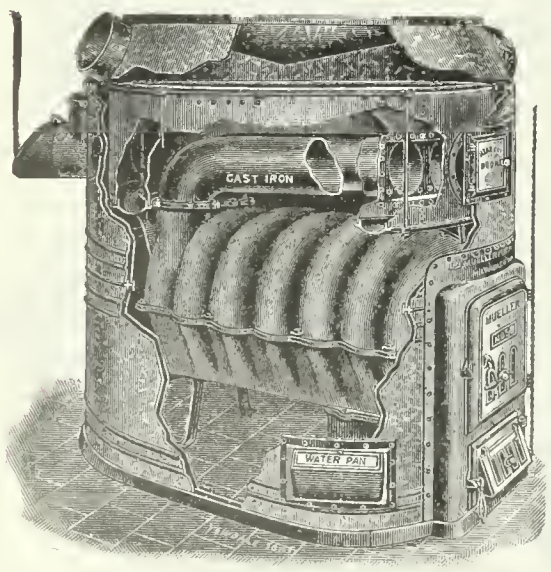

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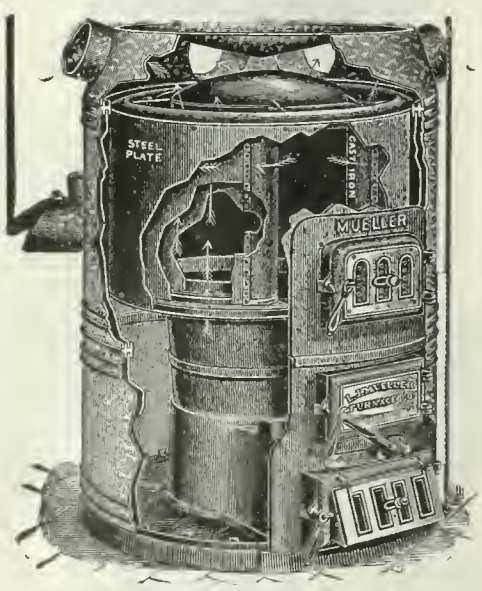

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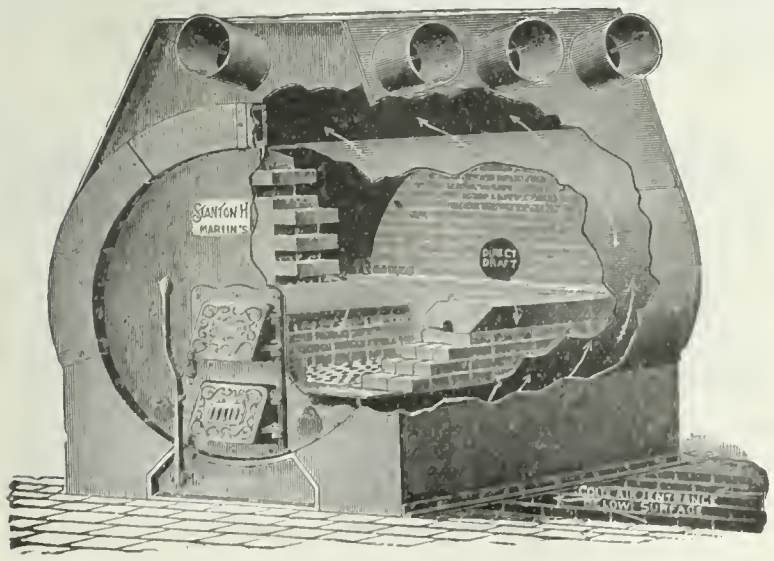

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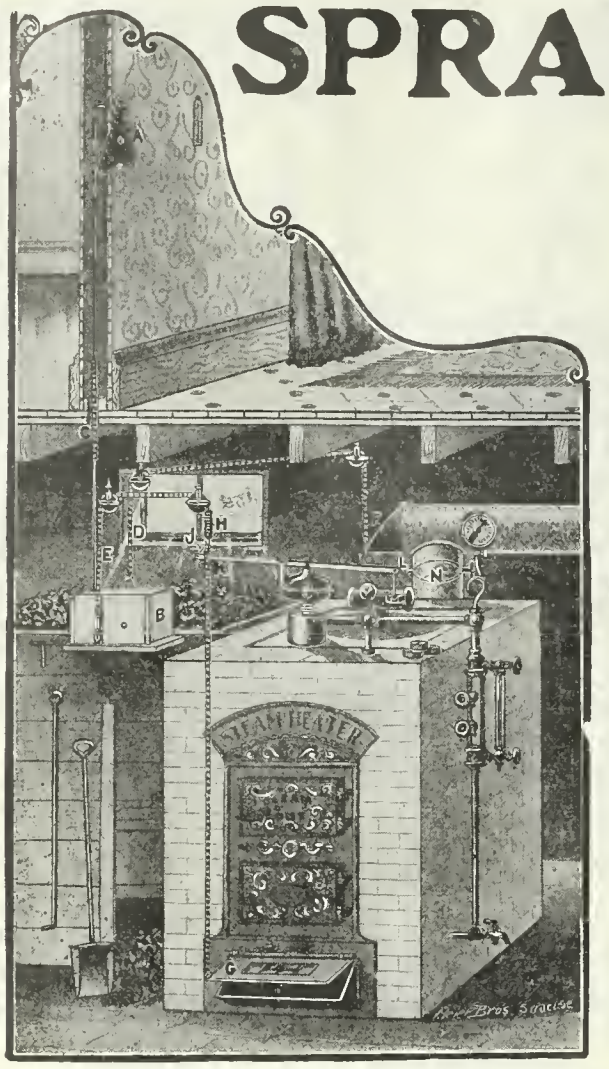

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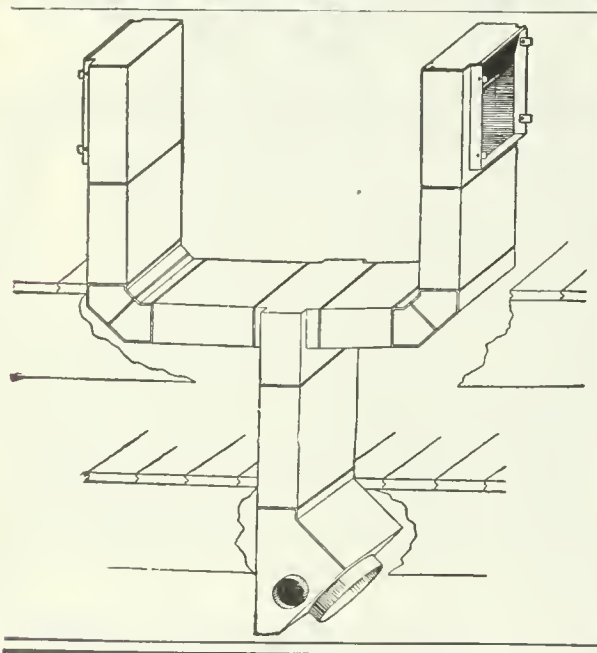

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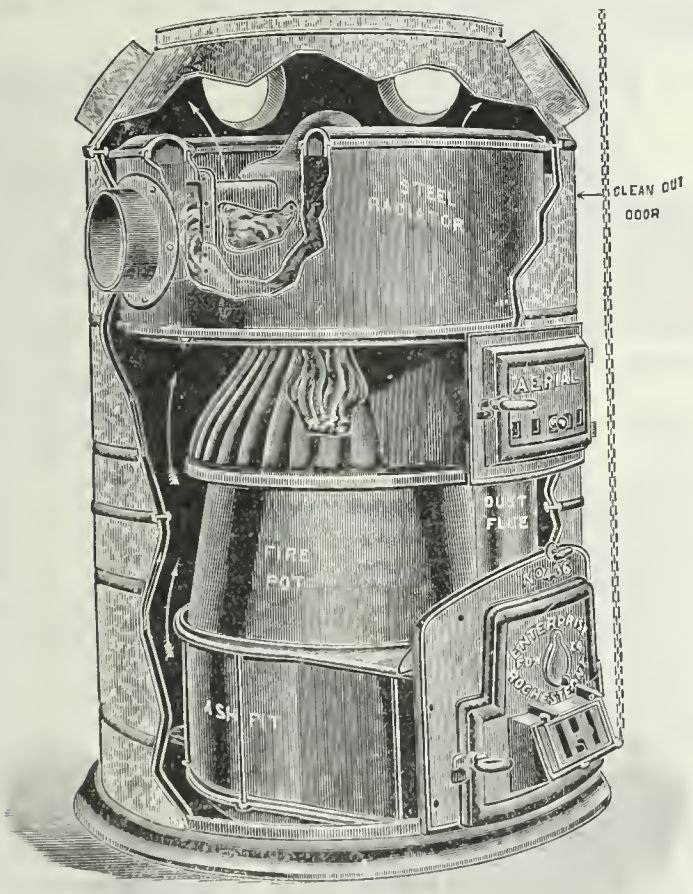

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Chapter III.—The Combination System—Discusses Heating Distant Rooms with Radiators—Balancing the System—Location of Water Heater in Furnace—Capacity of Water Heaters—Size of Radiators, etc.

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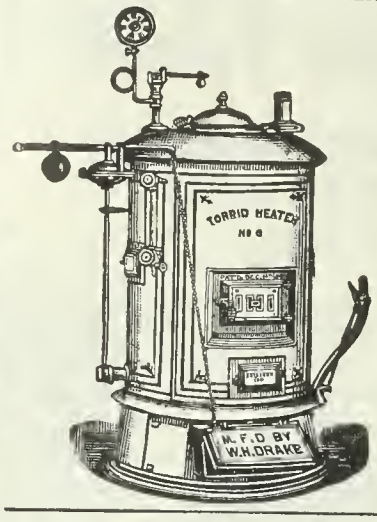

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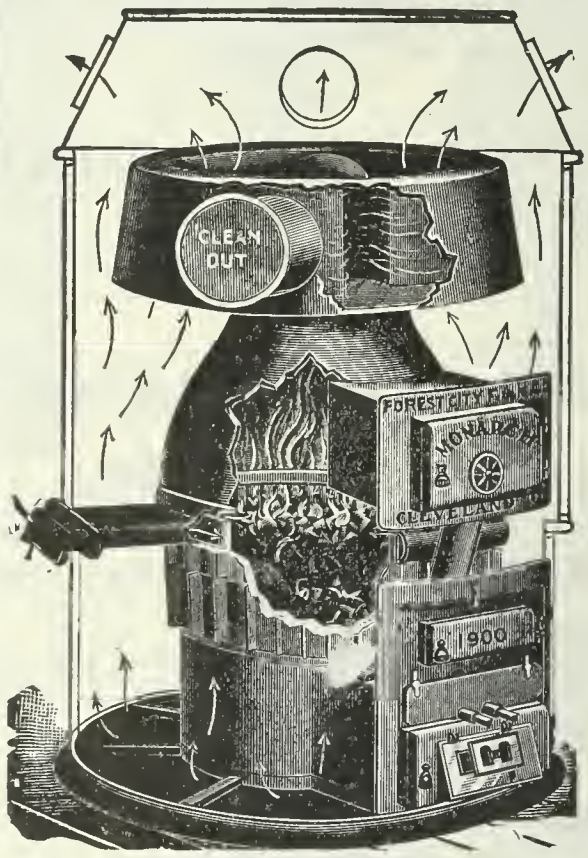

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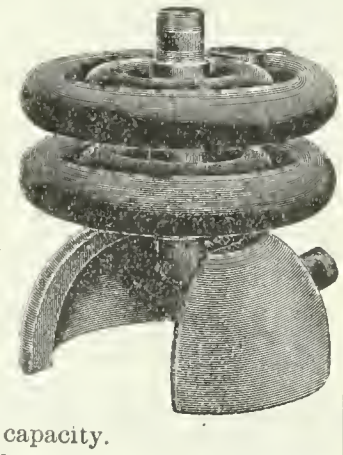

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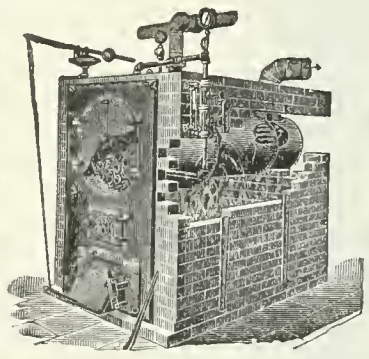

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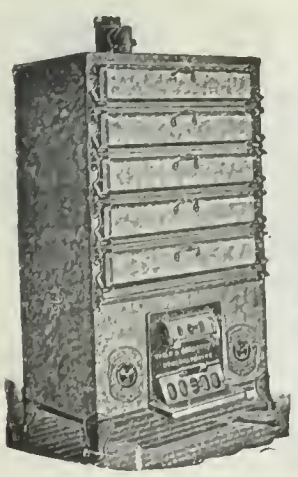

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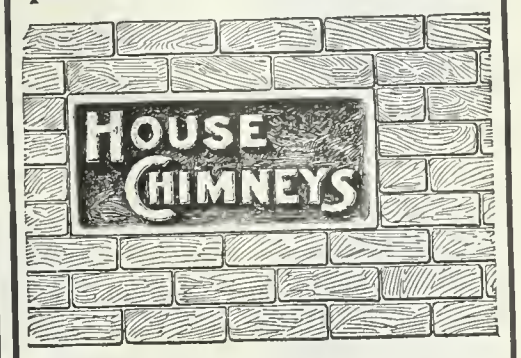

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DEFECTIVE FLUES - - - 33–35
This article presents information resulting from a wide, practical experience of the writer, and gives sound advice on some of the details of chimney construction.

HOW TO IMPROVE A WEAK CHIMNEY - - - - - 36–40

VARIOUS FORMS OF VENTILATORS or CHIMNEY TOPS 41–45

CONDENSATION IN STOVE PIPES - - - - - - 46, 47

SMOKE PIPE FOR WOOD FURNACES - - - - 48

REMEDYING DOWN DRAFT IN CHIMNEY - - - - 49–51

CONNECTED FLUES DESTROY DRAFT - - - - - - 52–55

FAILS TO BAKE ON BOTTOM 56–62

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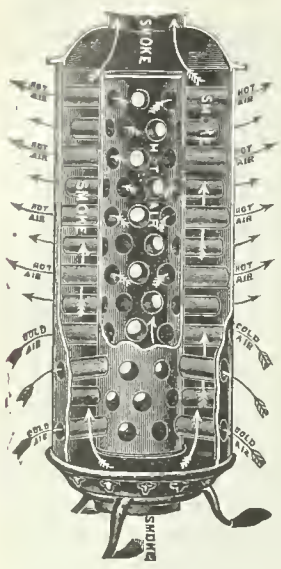

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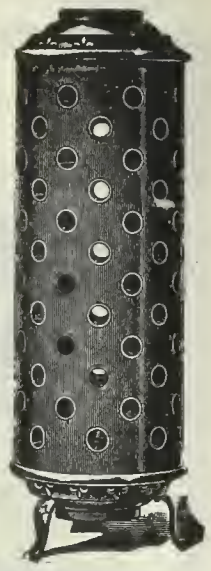

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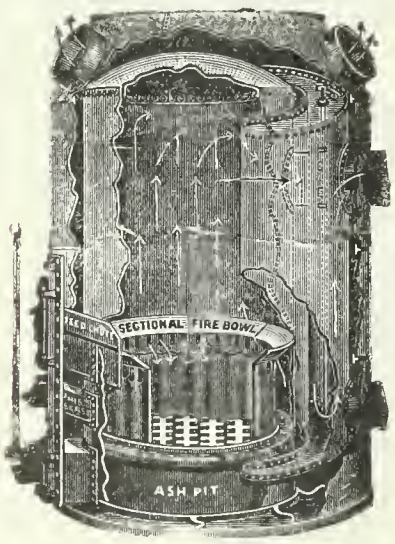

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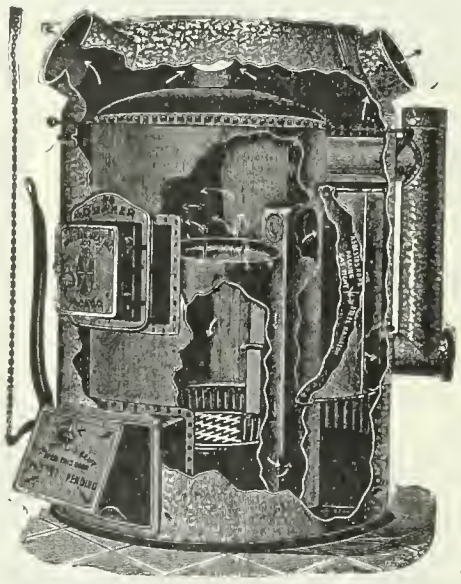

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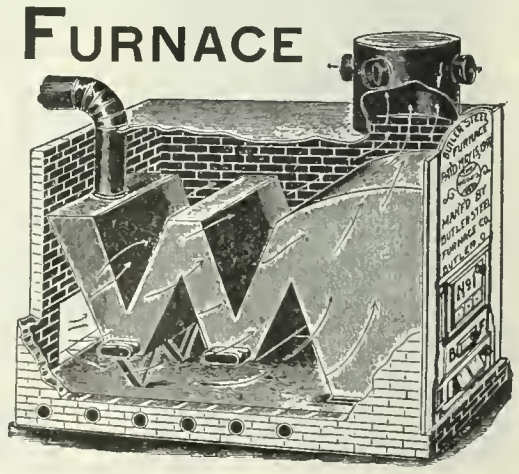

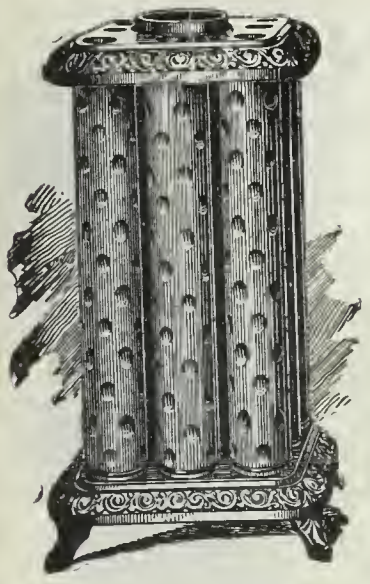

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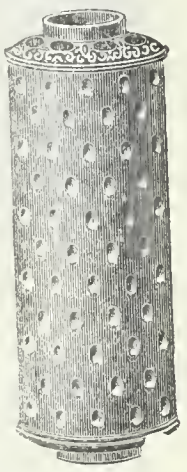

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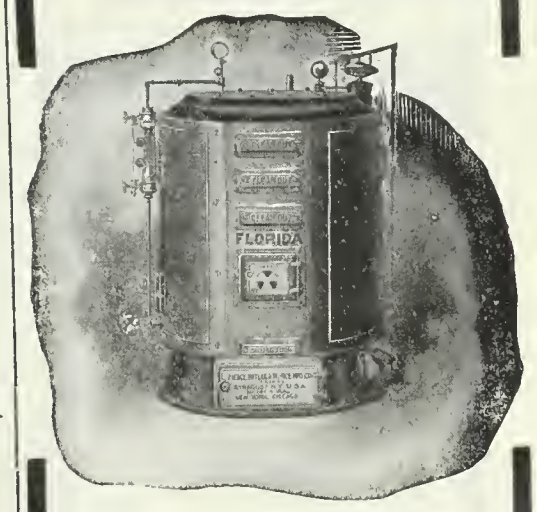

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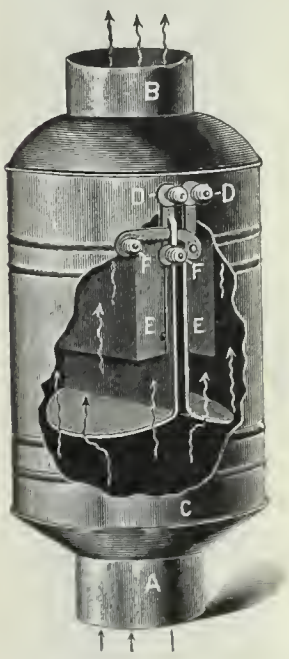

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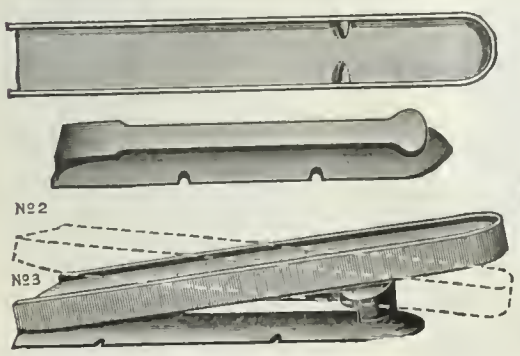

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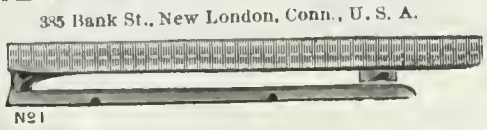

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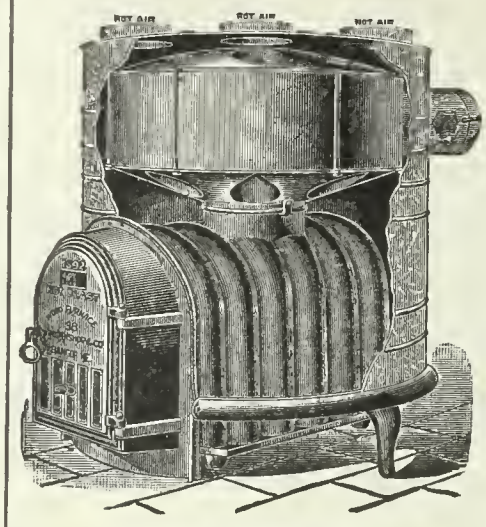

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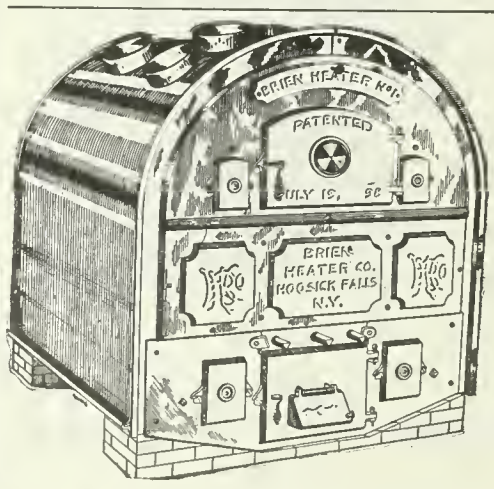

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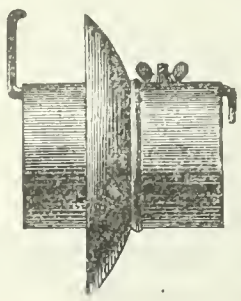

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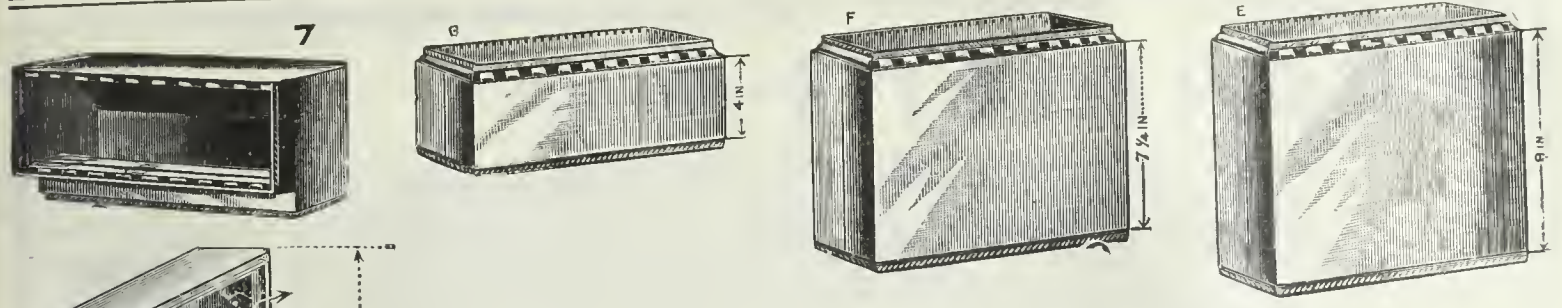


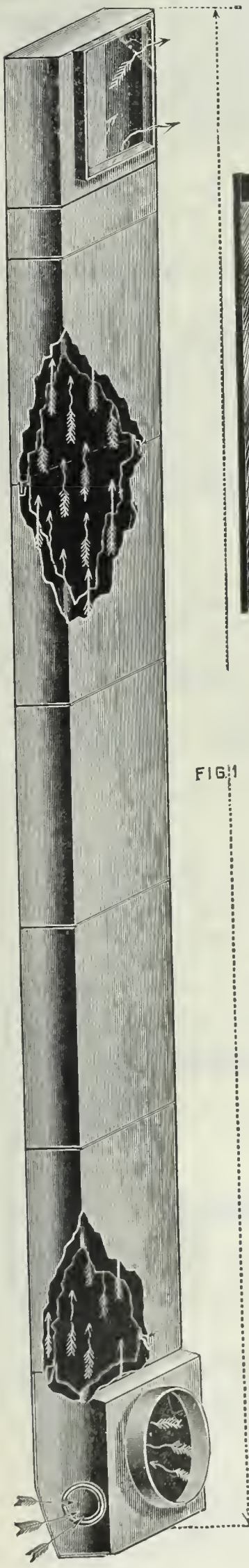
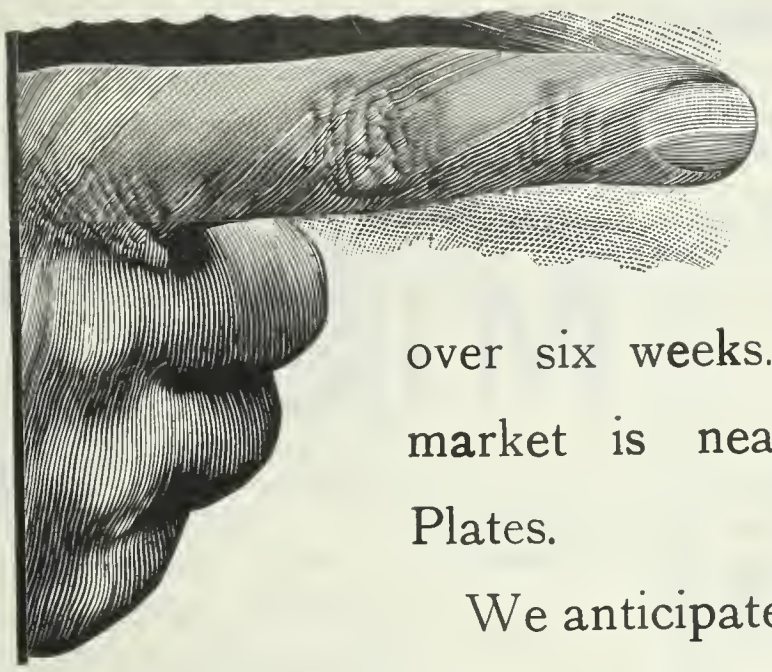


FIG. 1



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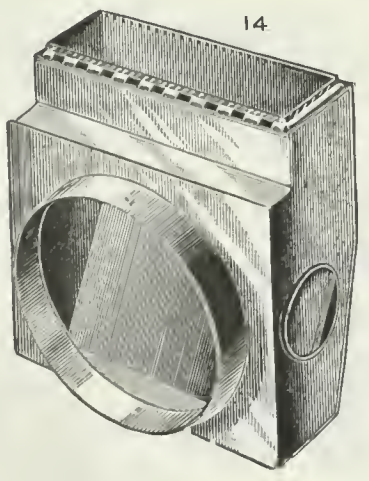

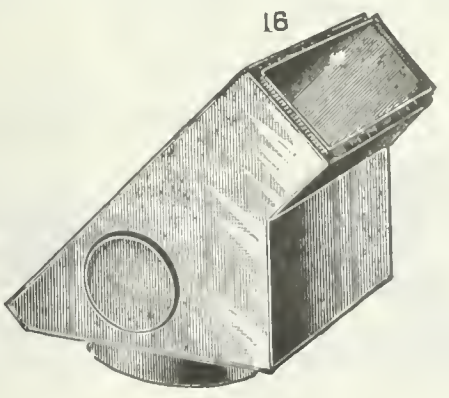

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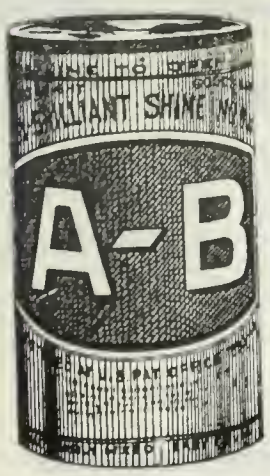

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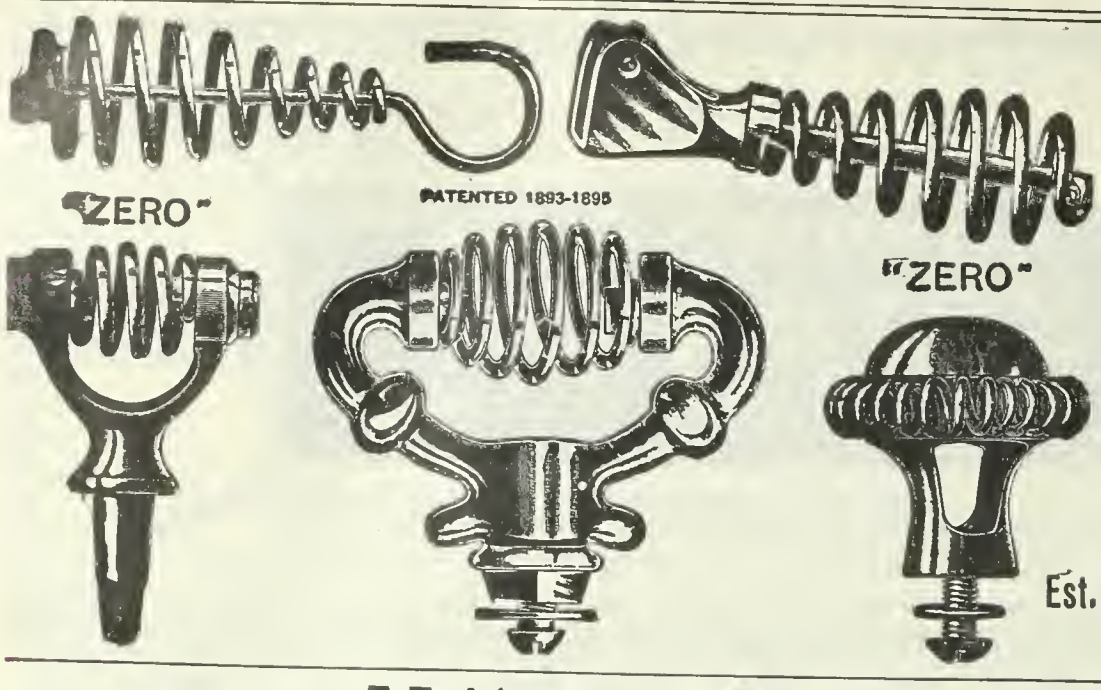

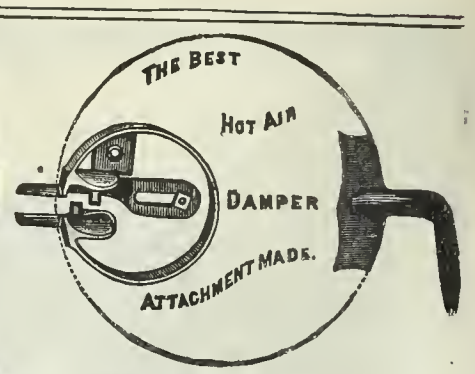

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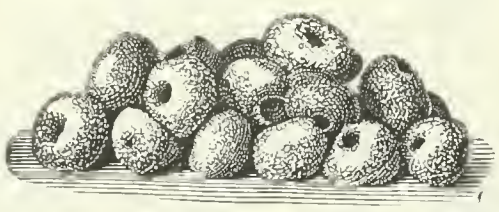

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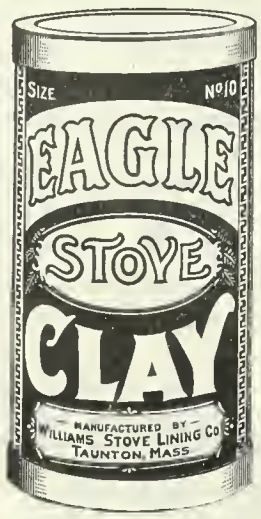

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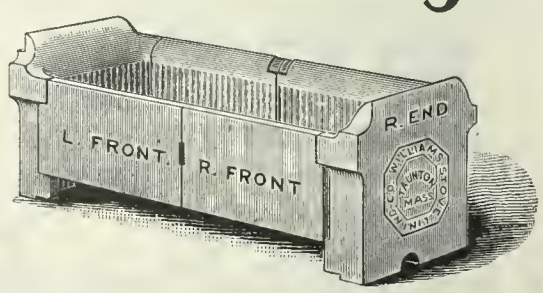

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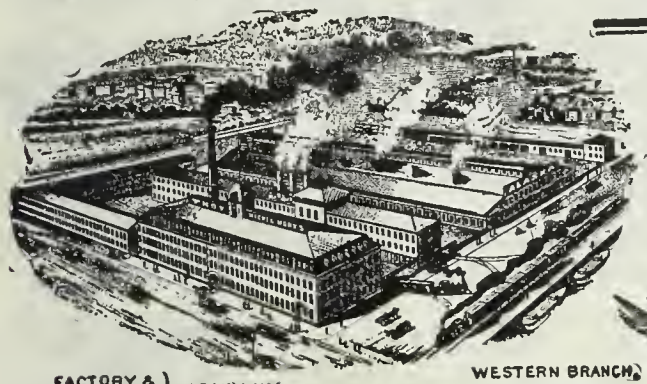

FACTORY & MAIN OFFICE } ALBANY, N.Y.

WESTERN BRANCH, CHICAGO, ILL.

TROY NICKEL WORKS

Albany, N.Y.

POKERS, LID LIFTERS,
KNOBS, HANDLES, and a full line of HARDWARE.

MARCY STOVE REPAIR CO.,

MANUFACTURERS OF

RANGE, STOVE AND HEATER REPAIRS

AND FIRE-BRICK LININGS,

74 Beekman Street, New York.

FOUNDRY,
Perth Amboy, N. J.

FIRE-BRICK FACTORY,
36 to 46 South Fourth Street, Brooklyn, L. I.

BRANCH STORES:
South Fourth Street, Brooklyn, L. I. 362 Grove Street, Jersey City, N. J.

CATALOGUES NOW READY.

STOVE REPAIRS
WATER FRONTS
AND EVERYTHING FOR THE TIN SHOP

We can serve you better than anyone else. WHY? Because we have the stock on hand.
Repairs for 20,000 different stoves and furnaces.

WRITE FOR CATALOGUE. **H. E. HESSLER CO., Syracuse, N. Y.**

M. D. VALENTINE & BRO CO.

FIRE BRICK

CUPOLA LININGS A SPECIALTY.

WOODBRIDGE, N. J.

PRESBREY STOVE LINING CO.,

TAUNTON, MASS.

The STAR NON CLINKER BRICK will outlast all others —and are GUARANTEED TO FIT.

—We make PROMPT SHIPMENT.—

AMERICAN SEAL

Elastic Oil Roofing Cement, Stove Putty,
Asbestos, Furnace Cement and Roofing Paint.

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J. L. PERKINS & CO., Western Agents, 241 Lake St., Chicago.

HANDLE THE BEST.

CHAMPION STOVE CLAY

Is the only brand made of crucible materials, viz.: Imported German Fire Clay and Plumbago from Ceylon.

Dealers are invited to send for circulars.

Packed in neat, attractive, round pasteboard boxes of three sizes: large, medium and small, holding about 10 lbs., 6 lbs. and 2½ lbs., respectively.

ALSO SOLD IN BULK.

Your jobber can furnish the goods.

BRIDGEPORT CRUCIBLE CO.
Bridgeport, Conn.

"O. H." ONE PIECE STOVE PIPE Elbows

Perfectly round and true to size. With long ends, DOUBLE LOCK SEAM in throat or under side of Elbow.

HANDSOMEST, HEAVIEST AND STRONGEST STOVE PIPE ELBOW MANUFACTURED.

—SOLE MANUFACTURERS,—

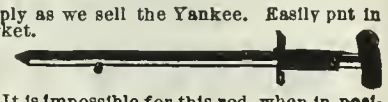
THE LAWRENCE-LETTS ELBOW CO., Ltd., - - Waverly, N. Y.

The YANKEE Hot Air DAMPER (Improved All Steel.)

THE YANKEE EXCELS.

Above All—Cheapness—a dealer cannot possibly make dampers as cheaply as we sell the Yankee. Easily put in and taken out of pipes. Stiffest, quickest-working and neatest damper on the market.

ROD POINTS: Has wood enameled handle. Wood handle cannot come off. Washer and spring cannot fall off the rod. Same size of holes are punched on each side of pipe Rod is made of ¼ inch cold-rolled steel and slips into damper very smoothly. **Sample sent to any Dealer without charge.**



It is impossible for this rod, when in position, to move either way.

Sizes: 6, 7, 8½, 9, 10, 10½, 11, 12, 12½, 14 and 15.

The S. M. HOWES CO., Manufacturers, 40-46 UNION ST., Boston, Mass.

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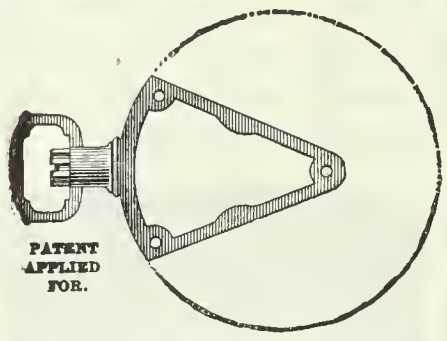
THE MALLEABLE IRON

DAMPER CLIP.



EASILY ADJUSTED AND INDESTRUCTIBLE

WRITE FOR PRICES.

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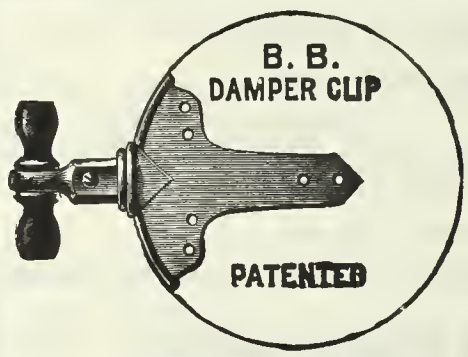


The B. B. Patent DAMPER CLIP

To remove Handle, simply loosen Nut *half way*—unnecessary to remove Bolt.

BEST AND CHEAPEST.

Send for Sample and be convinced.

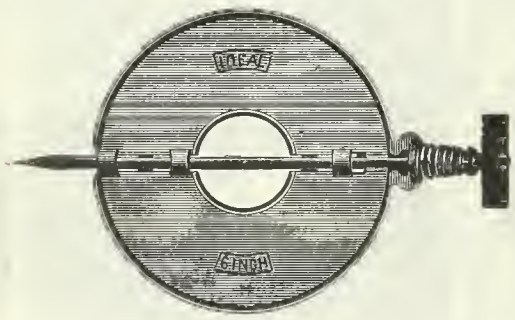
All kinds of Dampers—Plain, Uncle Sam, American and others always in stock.

Send for catalog.

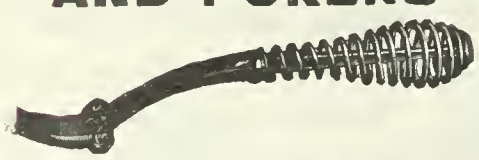
BERGER BROS. CO.,

Tinners' Hardware and Roofers' Supplies, PHILADELPHIA.

IDEAL DAMPERS, OOVER LIFTERS



AND POKERS



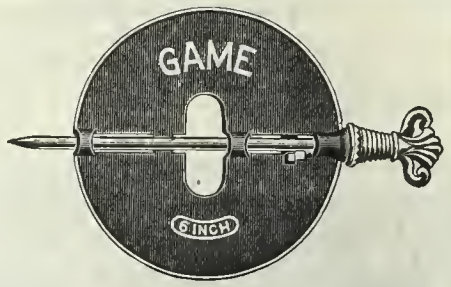
HAVE NON-HEATING HANDLES OF ELEGANT DESIGN AND FINISH. THEY ARE THE BEST.

STOVER MFG. CO.,

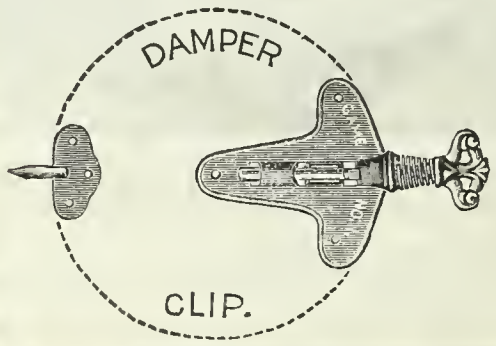
164 RIVER ST.,

FREEPORT, ILLS.

Game Stove Pipe Dampers and Clips.



The TAYLOR & BOGGIS FOUNDRY CO., Cleveland, O.



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Builders' Hardware, Oil and Gas Stoves.

Japanners and Electroplaters.

SHINES FOR ALL

It is the polishers friend, and will polish anything Write for free sample to

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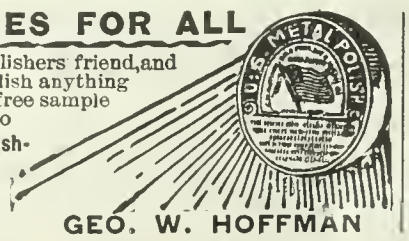

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PATTERNS

FOR STOVES AND HEATERS.

First-class in wood and iron.

Vedder Pattern Works. - Troy, N. Y.

—"If I say," said the teacher, "'the pupil loves his teacher,' what sort of a sentence is that?"

"Sarcastic," said the boy.—*Hermonite.*

NICKEL PLATING OUTFITS.

ZUCKER & LEVETT & LOEB CO.
526 TO 530 WEST 25TH ST
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SEND FOR CATALOGUE OF
NICKEL & ELECTRO-PLATING SUPPLIES & POLISHING MATERIALS.

STOVE POKERS and LIFTERS.

Arcade Plain Cast Lifter.
No. 3. Light pattern, coppered.
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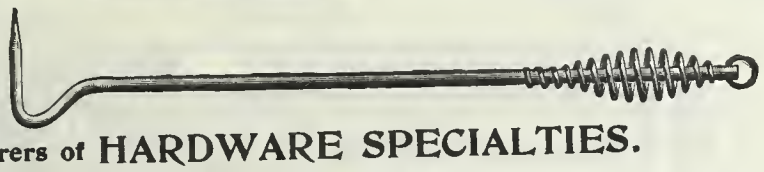
"Siberian" Poker.
Either bent or straight ends; length, 20 in.



Manufacturers of HARDWARE SPECIALTIES.
WRITE US FOR PRICES.
ARCADE MANUFACTURING CO., - FREEPORT, ILL.

DIXON'S Brazing Graphite

Prevents the brass from running over and sticking to the metal. Used and recommended by bicycle makers and repairers and others. Send for sample and price.

JOSEPH DIXON CRUCIBLE CO. - JERSEY CITY, N. J.

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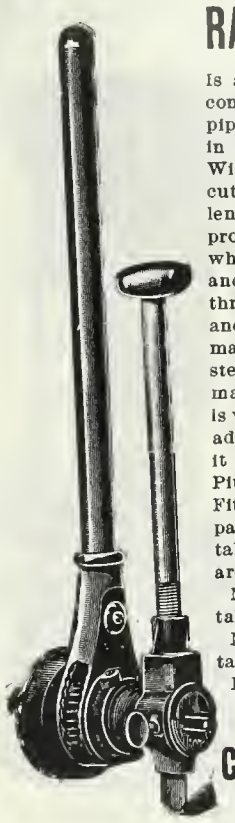


RATCHET STOCK

Is an indispensable tool for conveniently threading iron pipe in ditches, under floors, in corners, over head, etc. With this tool threads can be cut without removing whole lengths of pipe. This tool is provided with a strong vise which securely grips the pipe and by means of the leading thread the die is forced on pipe and the thread is cut. It is made of malleable iron and steel, and while light in weight, making it convenient to carry, is very strong and rigid. The advantages of this tool make it absolutely indispensable to Plumbers, Steam and Gas Pipe Fitters, Gas and Water Companies, Machinists, etc. It takes standard size dies, which are extra if furnished.

No. 1 threads ¼ to 1 in. pipe, takes 2 or 2½ in. die, $10.00.
No. 2 threads 1 to 2 in. pipe, takes 2½, 3 and 4 in. die, $17.00.
For sale by leading jobbers.

Manufactured Solely by
C. M. Kemp Mfg. Co.,
Baltimore.

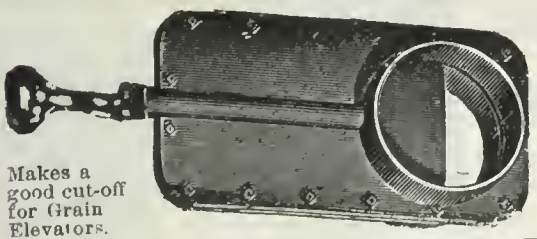
PIONEERS LEADERS

LOW SPEED DYNAMOS.
NICKEL ANODES.
LACQUERS.

NICKEL PLATING OUTFITS

BUFFS.
CYANIDE POTASH.
TURKISH EMERY.
POLISHING MACHINERY.

THE HANSON & VAN WINKLE CO.
NEWARK CHICAGO NEW YORK



Makes a good cut-off for Grain Elevators.

IMPROVED WIND-GATE

SEND FOR PRICE-LIST AND DISCOUNT TO
MINER & PECK MFG. CO.,
NEW HAVEN, CONN.

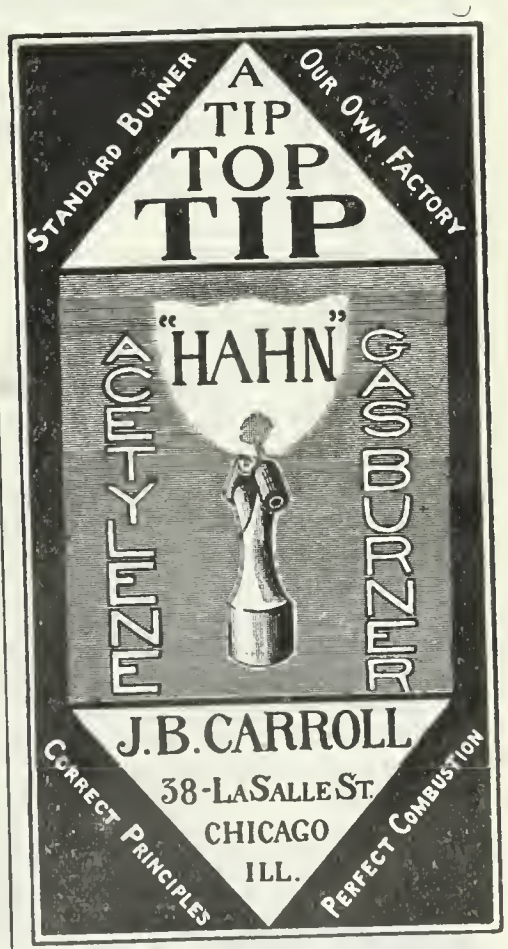
Hand Elevators and Dumbwaiters

made to be sold by the Hardware trade. Can be placed in position by any carpenter. Catalogue free.

ENERGY ELEVATOR CO.,
410 Cherry St., Phila., Pa.

TRIMO

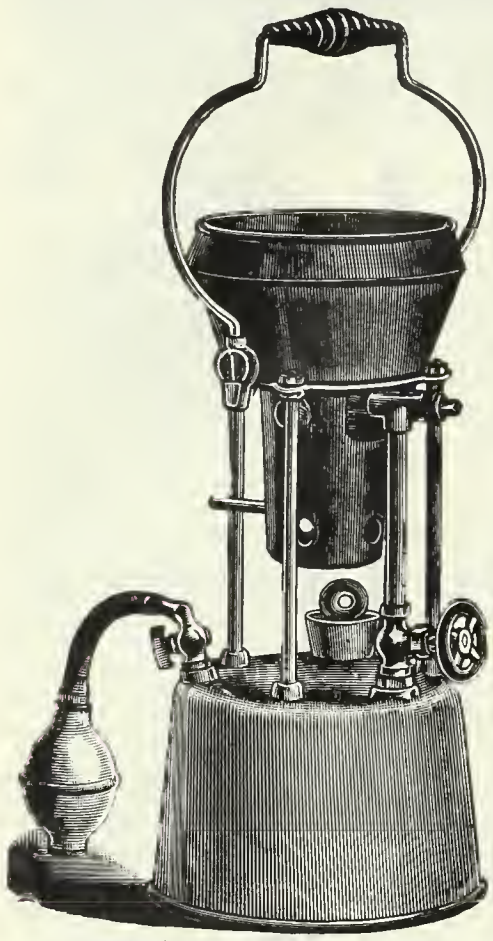
This PIPE WRENCH
is drop forged and built for hard usage. Does not crush, slip, or lock. All parts interchangeable Send for catalog showing complete line.
TRIMONT MFG. CO., Roxbury, Mass., U.S.A.



L. WOLFF
Manufacturing Company,

General Office,
93 W. Lake Street, CHICAGO.

WOLFF'S IMPROVED PLUMBERS' FURNACE,
The "DURO."



THE "DURO" "F" 1241.
PRICES UPON APPLICATION.

Quantity shipments are packed in cases 6 and 12 furnaces each.

The "DURO" Plumbers' Furnace

Has Drawn Steel Reservoir
Heavily Galvanized.

Drawn Steel Coil Cup.
Wrought Steel Bottom.
Patent Wire Handle.
Improved Filling Plug.
Safety Air Cock Joints.
No Cast-Iron Parts.

It weighs less than any other Furnace now in use.

In placing on the market

Our Improved Plumbers' Furnace

we have fully succeeded in producing ***the best furnace made.*** Most perfect in every detail. Of the highest efficiency. In operation, positive and reliable. Of substantial construction; combining lightness, strength and durability, at no more cost to the trade than the old style.

All component parts are interchangeable, being accurately made and fitted before shipment.

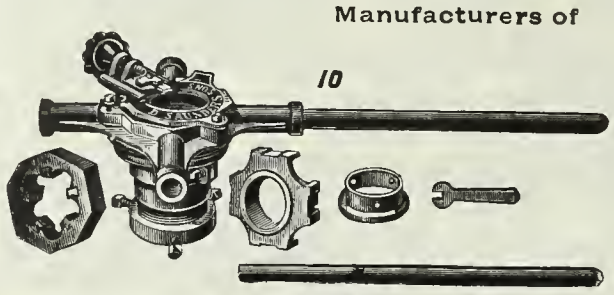
Illustrated Catalogue and Price-List sent upon application.

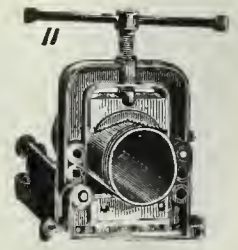
GALVANIZED STEEL and WOOD TANKS.

All sizes and shapes.
J. H. EDWARDS,
59 Park Place, N. Y.

D. SAUNDERS' SONS.

Manufacturers of





DIE-STOCKS AND VISES

FOR **LARGE PIPE.** These stocks have ***CUTTING OFF ATTACHMENT.*** and both Vises and Stocks are Malleable Iron. Light, strong and of superior design and finish; also ***PIPE THREADING MACHINES*** ¼" to 18", Tapping Machines, &c.

Send for Catalogue to

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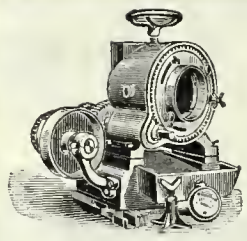
FORBES PATENT DIE STOCK



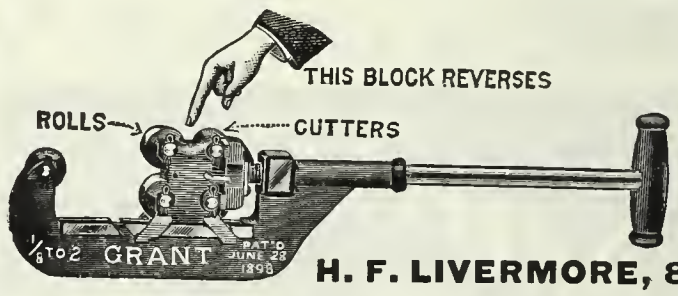
FOR HAND OR POWER.

Occupy less floor space, require less power to run, more simple of construction, far cheaper than any other machine of same range.

Send for Illustrated Catalogue. Manufactured by

THE CURTIS & CURTIS CO., 56 Garden Street, BRIDGEPORT, CONN.

THE GRANT CHANGE PIPE CUTTER.



ONE IS ENOUGH TO CARRY.
CUTS FROM ⅛ TO 2 IN.

Cuts with 3 cutter wheels, or with 1 cutter wheel and 2 rolls.

Changes Instantly.
Strong, light and simple.
Nothing to get out of order.

H. F. LIVERMORE, 81 Pearl St., Boston.

VANDERMAN'S
Adjustable Fitting
FOR
Soil Pipe Connections.

MODEL FITTING
Sent on Application

SEND FOR PRICE.

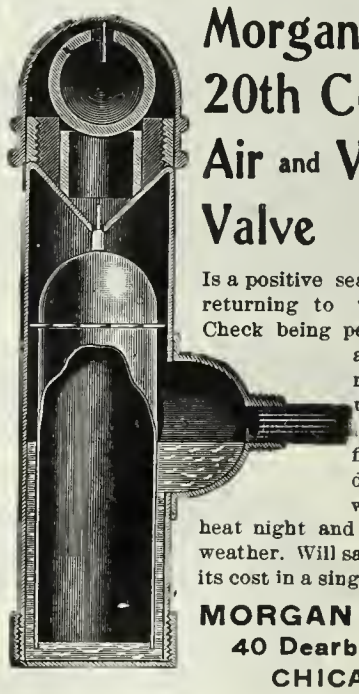
☞ Freight allowed on assorted lots of twelve East of Mississippi River.

Send for "A" Catalogue
Showing large line of

Plumbers' Specialties.

THE VANDERMAN PLUMBING & HEATING CO.,
WILLIMANTIC, CONN., U. S. A.

Morgan's 20th Century Air and Vacuum Valve



Is a positive seal against air returning to the radiator. Check being perpetually balanced in water requires no pressure to lift it. A banked fire, with drafts closed, will maintain heat night and day in mild weather. Will save four times its cost in a single season.

MORGAN & CO.,
40 Dearborn St.,
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Leather and Rubber
WASHERS,

Machine cut, at less price than can be cut by hand. Send Sample for prices.

I. G. MARSTON & CO.,
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COLWELL LEAD CO.,

63 Centre Street, New York.

Manufacturers of

LEAD PIPE, SHEET LEAD, SHOT,

And Sellers of

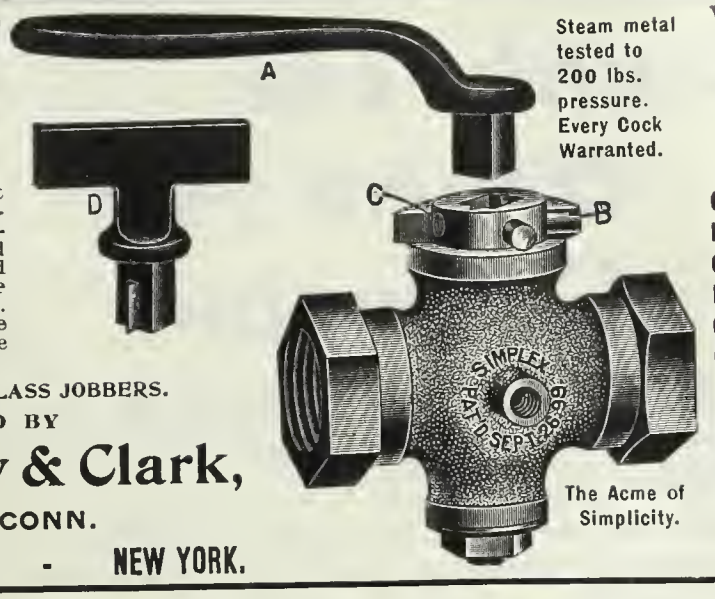
Everything You Want for Plumbing.

"Simplex"

Patented

Stop and Waste Cock

Practical plumbers know how difficult it is to reverse any of the cocks hitherto made, because they are so complicated. The "Simplex" can be changed from right to left hand instantly and CAN'T be set wrong. Interchangeable Lever. Tee Handle or Socket Head. To change from right to left or vice versa:—Take out set screw B. Reverse handle. Put set screw in hole C.



Steam metal tested to 200 lbs. pressure. Every Cock Warranted.

The Acme of Simplicity.

FOR SALE BY ALL FIRST-CLASS JOBBERS.

MANUFACTURED BY

Landers, Frary & Clark,

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Salesroom, 82 Chambers Street, - NEW YORK.

We Manufacture a Large and Well Assorted Line of

Compression Bibbs,
Basin and Bath Cocks,
Ground Key Lever Handle Bibbs,
Beer, Ale and Liquor Cocks,
Champagne Taps, Racking Cocks,
Cooler, Refrigerator and Can Cocks,
Bottling and Lock Cocks,
Kerosene Oil and Petroleum Faucets.
Fairy Hose Nozzles, Crown Water Filters, Towel Racks, Etc.

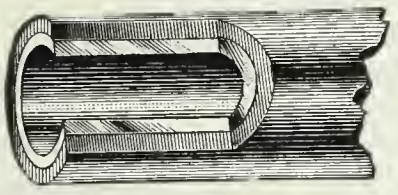
TIN LINED

IRON PIPE.

For Pure Water.

Avoiding without extra expense all danger of lead or brass poisoning.

L. & R. PIPE.—Patented.



This lining cannot be torn from the pipe even by bending or by hot water.

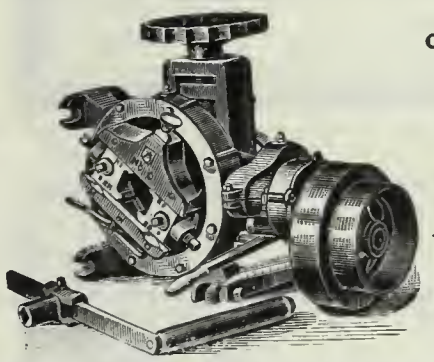
LEAD LINED

IRON PIPE.

Made the Same Way.

LAMB & RITCHIE, Cambridge, Mass.

WE BUILD A SUPERIOR LINE



No. 0 Threading Machine, Power Attachment.

of PIPE THREADING, and CUTTING OFF MACHINES, (Hand or Power,) STOCKS, DIES and other Tools

For

WATER, STEAM and GAS FITTERS.

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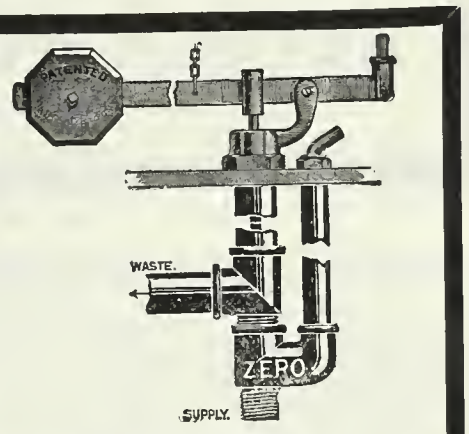
THE ARMSTRONG MFG. CO.,

139 Centre St., New York. BRIDGEPORT, CONN.



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The expense of installing closets by getting

Zero Anti-Freezing Valves.

They can be put in with half the time and half the labor because they do not require a pit or vault.

They are simple and durable in construction—made without screws, springs or pins.

Zero Valve & Brass Mfg. Co.,

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ALWAYS IN STOCK.

ALL SIZES OF

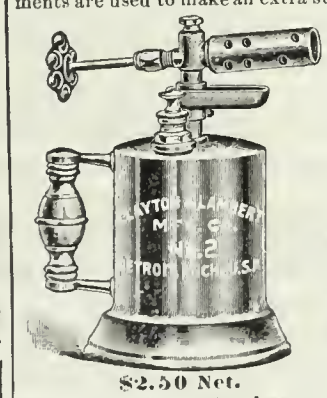
Galvanized range boilers, expansion tanks and boilers with copper tube coils inside for heating water by steam.

L. O. KOVEN & BROTHER,

Office 50 Cliff St., New York City.

In The No. 2 We Are Offering You

a quart size torch, having every **improvement** that **improves.** The tank is drawn out of heavy brass, free from seams, and all fittings are heavy. Reinforcements are used to make an extra strong tank. A brass air pump of the latest design screws into the tank and is submerged in gasoline, which aids in keeping it cool, and also protects it from injury. The burner used is a strong generator, producing a clear, blue, blast flame, using very little gasoline. In fact, **the user will soon save the cost of the torch in the saving of gasoline alone;** with it he can do any work that can be done with any round burner torch The No. 2 is light, well balanced, easily handled, and is sure to please. A careful inspection will convince you that only the best of workmanship and materials have been used. **Remember our name on a Fire Pot or Torch** means your money back if you are not pleased.



$2.50 Net.

CLAYTON & LAMBERT MFG. CO.,

Detroit, Mich., U. S. A.

SISSON

INSERTABLE

JOINT

FOR SOIL PIPE.

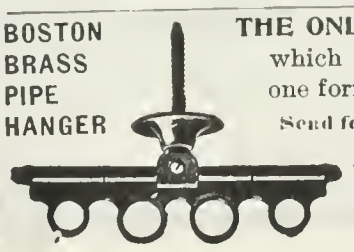
Sizes, 2 to 6 Inches.
Light and Heavy.
Saves labor, expense, and makes a neat job.

SEND FOR CIRCULAR.

R. Estabrook's Sons,

1st St., Boston, Mass.

BOSTON BRASS PIPE HANGER



THE ONLY ONE which requires but one form of holder

Send for Circular.

JOSEPH H. YOUNG

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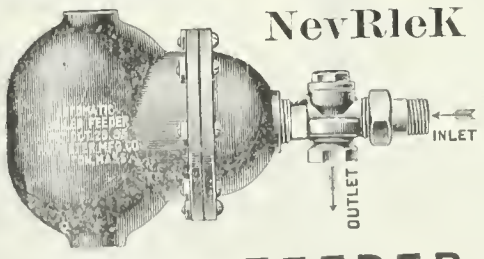

BOILER FEEDER.

Our Booklet tells all about it.

F. W. FOSTER MFG. CO.,

12 Portland St., Boston.

There's only one Warm Air Generator.

THE KELSEY WARM AIR GENERATOR has been known by this name and so advertised for twelve years, and is manufactured solely by the Kelsey Furnace Company, Syracuse, N. Y.

The splendid results obtained with the "Kelsey" are becoming better known each year, and the demand for them has increased so rapidly that a certain firm or company, hoping to reap some of the benefits of the now famous "Kelsey," have used the term "Warm Air Generator" in connection with a heater they make.

The construction, however, of the Kelsey Warm Air Generator, being fully covered by patents, will be protected and cannot be successfully imitated.

The Kelsey Warm Air Generator will increase your business.
The Kelsey method of warming the air is the best method.

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THE METAL WORKER.

NEW YORK AND CHICAGO.

New York, September 28, 1901.

DAVID WILLIAMS COMPANY, - - PUBLISHERS.

BUSINESS OFFICES:

NEW YORK.....232-238 William Street.
PHILADELPHIA.....117-119 South Fourth Street.
BOSTON.....33 Mason Building.
PITTSBURGH.....Room 509 Hamilton Building
CHICAGO.....1205 Fisher Building.
CINCINNATI.....Rooms 22-24 Pickering Building.
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Volume LVI.....No. 13
Index to Reading Matter.....Page 68

A Promising Outlook.

Soon after the beginning of the great strike in July the opinion was freely expressed by those best qualified to judge that the indications pointed to a repetition of the conditions which obtained last year as a result of the protracted closing of the tin plate, sheet and bar mills. This has been completely verified. The production in these lines was last year so heavily restricted that the stocks at the mills, in merchants' warehouses, in manufacturing consumers' hands, and of all finished products dependent on the output of these mills were very low. Therefore when they were started a conditlon of activity was prccipitated which continued without a break until the strike began this year. It was impossible during that time to accumulate any stocks of materials or of manufactured goods to form a reserve on which the consumers of the country might depend in case of any sudden interference with production. The strike of this year thus came upon a market which was practically almost bare, and has resulted in an even worse condition than that of last September, when the idle mills were started.

The strike of this year has been more widespread in its scope. It not only embraced the lines which were involved last year, but included wrought pipe and unmanufactured steel. The requirements of the country in the meantime have been very heavy, much exceeding those of last year. The mills which are starting are therefore confronted with a demand from all classes of buyers, which promises to sustain business in a very active condition far into the coming year. It will take many months to restore stocks of manufactured goods and of necessary materials for manufacture to their normal condition. The outlook in all business lines is bright, as the purchasing power of the people was never better. Especially true is this of iron and steel manufactures. A demand exists in every direction for building materials and for iron and steel products which enter into all classes of improvements. In view of existing conditions, it would not be surprising to find prices firm, in face of the fact that the production of iron and steel is increasing through the starting of new plants.

The Cost of the Strike.

When any great undertaking is completed it is of interest to count its cost, and similarly, when any serious disaster occurs, the losses incidental to it are carefully estimated for the information of the public at large. In connection with the great steel strike just ended, some attempts have been made to estimate the approximate cost to the workers and to the United States Steel Corporation. These are, however, for the most part merely guesswork. There was unquestionably a great loss to the thousands of workmen who were idle, but if there had been no strike at all it must be remembered most of them would have been idle part of the time on account of the usual midsummer repairs. Still, their loss in wages undoubtedly ran into the millions. On the other hand, the Steel Corporation suffered a serious diminution in the volume of its output, notably in the lines of tin plates, sheets and tubes. There is, however, a considerable difference between the losses in these two cases. A large number of the company's orders hold over and will be filled in the course of the next few months, the present losses being largely counterbalanced in time by increased production and consumption, so that the loss to the corporation is by no means absolute. Such, however, is not the case with the workers. They can no more make up any of the wages they have lost than the mill wheel can use the water that has passed. This fact is a telling commentary on the folly of the strike which has just closed so disastrously for the Amalgamated Association. In figuring the losses of the strike, however, it should be borne in mind that the workers are not the only sufferers. There are others who in a greater or lesser degree have shared in the losses. Consumers who from lack of material have been obliged to refuse orders, or who have been forced to buy the necessary material to enable them to fill their contracts at a price which in some instances precluded any profit, are also to be taken into the account. Moreover, the loss in wages to the workers has been keenly felt by a large number of the trades people with whom they deal. The enforced economies which have been practiced by the strikers and their families mean a large hole in the business of such dealers. These and other incidental damages must be taken into account in attempting to estimate the total loss caused by the strike. The lesson involved in this latest labor struggle will, it is hoped, impress itself strongly upon labor leaders throughout the country. If the sentiment expressed recently by a prominent British labor leader, who is also a member of the House of Commons, that "a strike is such a terrible weapon that, while I am a trade union leader, I will nover use it if I see the remotest chance of quiet negotiations succeeding," were generally acted upon by those in power in the labor organizations of this country, we should never again see such an unjustifiable strike as that which has just terminated.

Museums of Sanitation.

Considerable interest is caused by a proposition to erect a new building for the Parkes Museum of Sanitation in London. This proposal has called attention to the useful work of that institution. Although founded only twenty-five years ago, with the object of promoting sanitary science, this work has grown to have an important relation to matters of public health, not only in London, but throughout the United Kingdom, and some of its 2500 members are to be found in every quarter of

the globe. The museum contains a permanent exhibit of methods of construction, materials, water supply, sanitary plumbing, sewerage, heating, lighting and ventilation. It carries on special investigations into problems of sanitation, and maintains a library and reading room for purposes of original research. Moreover, it conducts courses of lectures for the instruction of sanitary inspectors and engineers, and also gives instructions to teachers, in order to enable them to impart to their pupils primary lessons in the science of hygiene and sanitation. The success of the Parkes Museum suggests the desirability of establishing similar institutions in the large cities of the United States. Any agency of the kind which works for the improvement of the public health is obviously of incalculable value.

German Heating and Ventilating Engineers.

The frequency with which the tables and data compiled by German engineers engaged in the construction of heating and ventilating apparatus are referred to and used by engineers in the same field in the United States will lend interest to the account of the meeting of the German Society of Heating and Ventilating Trades, held last month at Mannheim, Germany, which is presented on another page. Visits of heating engineers from the other side to the United States are not infrequent, and they are not confined to any one country. While it is natural that a number of English engineers should have visited us, they have not been by any means in the majority. The greater part of the visitors undoubtedly have come from the German speaking countries, and some of them have made a stay of several months, closely studying the details of the construction of American heating apparatus. In the accomplishment of prodigious work in the heating and ventilating field, the American engineer, beyond a question, stands in the front, but it is equally true that there has been little attempt to preserve data of these accomplishments, in the hurry for the completion of one big job in order to undertake another. To the German engineers must be accorded the position of the most careful students of the problems of their every day work. Of the highly interesting and important work in this line that is going on in the world the Germans seem to be alone in studying the methods and recording in detail the information gained and in formulating rules for the guidance of others engaged in the same field. This fact will lend increased interest to the papers read at the Mannheim meeting, which are said to contain information and data of value not only to the American engineer, but to all who are engaged in the work of constructing heating and ventilating systems.

In the current issue of the *World's Work*, Hon. Carroll D. Wright, chief of the Labor Bureau in Washington, discusses the industrial advance in America and gives some striking statistics illustrating the remarkable progress made by this country during the past decade. Mr. Wright says that the number of manufacturing establishments in this country in 1890 was 355,415, while the schedules of the census of 1900 show 653,000 manufacturing establishments in operation last year, making a net gain of nearly 300,000 establishments engaged in the manufacture of goods. The total value of products in 1890 was $9,372,437,283, while a very conservative estimate of the value of all products in 1900 places it at not less than $15,000,000,000. This is a magnificent statistical showing of industrial progress which cannot be paralleled by any country in the world.

So scarce is labor in some parts of the country, especially in the West, that it is becoming a serious problem with manufacturing and other industries in that section as to where to obtain the necessary supply of workmen. In a report recently submitted to the City Council of Dallas, Texas, it was stated that certain kinds of labor were so scarce in that city as to absolutely prevent, in some cases, the fulfillment of contracts within the specified time. It was stated that common laborers were receiving $2 a day and bricklayers as high as $8 a day, and yet a sufficient number of workers could not possibly be secured even by the attraction of such high wages.

Some idea of the wonderful extent of the petroleum development from the recent discoveries in the Beaumont region of Texas may be obtained when it is stated that the current output of oil from 30 wells at Beaumont amounts to about 1,500,000 barrels daily. The annual production for the whole country prior to the Texas discoveries aggregated only about 60,000,000 barrels a year. That is to say, the Beaumont gushers alone are yielding every 40 days as much oil as the whole outside country produces in the course of a year.

The present is one of those rare times when all branches of the heating trade are enjoying a heavy business. Stove manufacturers are pleased with the manner in which their products are selling, the furnace manufacturers have never had a larger demand than they are experiencing, and the makers of steam and hot water heating apparatus are simply overwhelmed with the orders which are rolling in on them from all sides. It has probably been fortunate for the last named that the supply of wrought pipe has been restricted by the strike in the tube works. This has interfered with the piping of many heating plants and has enabled the manufacturers of boilers and radiators to more nearly keep up with the demand for their products.

THE CONSOLIDATION OF HARDWARE JOBBING INTERESTS.

Manifold rumors and not a few detailed reports are current in regard to the attempt to effect a widespread and comprehensive consolidation of the interests of hardware jobbing houses throughout the country. While the thing is apparently largely in the air, there is no doubt that some prominent jobbing houses have been approached on the subject with a view to securing their identification with the scheme and obtaining options on their busines. Were it not for this fact the whole project is so visionary and impracticable, at least in the forms in which by common report it is presented, that it might be passed over as undeserving serious consideration.

The subject of jobbing consolidation is not a new one. It has been discussed by merchants of prominence and ability, who have maintained with much force that something in the direction of uniting the interests of competing jobbers on a larger or smaller scale would tend to diminish competition and correct some existing evils. The form in which the matter is presented in current discussions has, however, little in common with such moderate and reasonable views.

According to some enthusiastic advocates of the scheme, a consolidation of many of the jobbing houses scattered through the country, and thus covering all sections, would result in important advantages in power and prestige as well as economies in administration and distribution. The interests thus effected would be so potent, it is claimed by these extremists, that the consolidation would practically control the jobbing hardware business, being in a position to dictate to manufacturers and prevent them from supplying any jobbers who might be audacious enough to compete with them. Goods would be purchased at exceedingly advantageous prices in view of the great quantity handled, and at the same time there would be an important reduction in the expense of doing business, the force of traveling salesmen, for example, being cut down to a fraction of the present number. It is expected, too, that manufacturers will stand in awe of such a gigantic concern cover-

ing the whole trade, and will be proud to run their business for the benefit of the consolidated interests. This condition of things would naturally lead to the control of the production of many lines of hardware, and the profits of the manufacturers would be added to those of the distributers of hardware. The statement of such a project discredits it. But when building castles in the air why should imagination be restrained by the teaching of experience or the dictates of common sense?

It is unnecessary to point out the difficulties which lie in the way of the successful carrying out of such an enterprise. Even supposing that there is to be found the financial backing for the project, and that the stock would either be accepted by the houses who thus desire to get out of business, or be taken by a credulous public, this would only be the beginning of the obstacles in the way of the consolidation. The enterprise would certainly be weighed down by a liberal allowance for the good will purchased. The jobbing business may be far from satisfactory, but few houses whose identification with such a project would add to its strength would be willing to sell out without something of a fancy valuation.

It must be remembered also that any such aggregation of jobbing interests, putting great power in the hands of the corporation thus constituted, would be regarded with special disfavor and apprehension by the manufacturers. A condition of things giving such consolidation anything like a control of jobbing interests, or making it even a dominant force in the trade, would be antagonistic to the interests of manufacturers, and would necessarily be regarded by them with repugnance. Many of them have learned through bitter experience the folly of having only one or two houses through whom they have marketed their goods, and they generally recognize the safety there is in having a number of customers, and other things being even, the more the better. If it were necessary for them to tie up to one concern for the distribution of their products they would want to get out of business as quickly as possible. When the unwise advocates of such a scheme talk of the power of the consolidation in dictating to manufacturers they are but exploiting their own folly.

Perhaps even a graver obstacle would be found in the unpopularity with the trade at large of anything that might, justly or unjustly, be designated as a trust. The marketing of goods by jobbing houses outside of the consolidation or by manufacturers in direct dealing with the smaller trade would thus be materially facilitated, and any advantage that might be gained in the purchase of goods or in economies in their distribution would be counterbalanced.

The advantages of such a consolidation, on an exaggerated estimate of which the arguments in favor of the project are based, would certainly be more than offset by the disadvantages. There is, however, no need to consider the matter seriously. While there is a possibility of local consolidation or for a few jobbing houses to unite their interests, the manner in which the matter is presented in current discussions is fantastic and impracticable. Were a serious attempt made to carry it out on anything like the lines indicated it would be consolidation gone mad.—*The Iron Age.*

ANTHONY'S BULLETIN gives the following practical method of turning blue prints to a rich brown color: A piece of caustic soda about the size of a bean is dissolved in 5 ounces of water and the blue print immersed in it, in which it will take on an orange yellow color. When the blue has entirely left the print it should be washed thoroughly and immersed in a bath composed of 8 ounces of water, in which has been dissolved a heaping teaspoonful of tannic acid. The prints in this bath will assume a brown color that may be carried to almost any tone, after which they must again be thoroughly washed and allowed to dry.

The Emperor William of Germany has presented a costly porcelain vase, which will be offered as a prize for the most successful stationary engine burning alcohol. The prize will be awarded by the German Agricultural Society.

COUNTY FAIR EXHIBITS.

BY ENTERPRISE.

From the beginning of life, as children, we all desire to do what our neighbors find pleasure in doing, even though circumstances may not permit us to indulge our wishes as children and our finances may not allow it as business men. For a number of years I have carried on business in a town where my competitor was much better off financially than I was. The latter has always had some sort of an exhibit at the county fair, which is held in our town, with one of his men to attend to it, answer questions, distribute circulars and virtually enjoy himself. I have had no one that I could afford to spare from my regular business during the fair week, nor did I feel that I could go to the expense in time, material and labor that was necessary. I have hankered after the flesh pots of Egypt, however, and the continual hankering was the father or mother of a method of enjoying them which I have got to the full this year.

Every man who does business in a fair town knows that a large bulk of the people do not go to the fair or come away from it until they have been in the town proper on some special errand. In the realization of this fact lay the success of my scheme. I knew that anything I might do to attract visitors to my store during fair week would be a legitimate advertisement of my business. I secured a large muslin banner, on which I put the words, "My Fair Exhibit is in the Store," and I had a large hand point to the store. I used plenty of different colored bunting and flags and Chinese lanterns, trimmed up the front of my store and displayed showy goods to add to the attraction. As the weather was fine, I fitted up an ideal kitchen on the sidewalk in front of the store, and got the colored man who blacks my stoves and his wife to come and help him manipulate that kitchen so as to arouse the curiosity of the people. I give a great deal of credit to Sambo, on whose originality I was forced to depend. It is safe to say that the ordinary tinware, agate ware and kitchen articles, and the range that I have used for years as a leader, never attracted so much attention as they did for the days that the fair visitors were in town. There was a crowd there continually, and many orders were taken inside the store for eave trough, conductor pipe, flashings and roof repairs that would never have come my way if I had not had my "fair exhibit" a mile and a half from the fair grounds.

If you will pardon my egotism, I will suggest that if a comparison was made of the business done by my competitor and myself during fair week it would be found that my mother wit surpassed his moneybags. In closing I will only make the suggestion that if a stove dealer will think in the right direction and use a little exertion to carry the "think" into effect, he will make the stove and tin shop of the town as much talked of as the bargain sale dry goods house.

The *Bulletin* of the New York State Department of Labor for the quarter ended June 30, 1901, just issued, says that the returns from the labor organizations in New York for the months of April, May and June show that employment was better than it has been in any of these months for the past five years. Only 2.3 per cent. of unionists were idle in that quarter, as compared with 9.4 per cent. in 1900, and 3.7 in 1899. It was the lowest percentage hitherto recorded by the Bureau of Labor Statistics. The improvement in the condition of the labor market was very general, extending to nearly all industries except the printing business.

The International Correspondence Schools of Scranton, Pa., direct attention to the fact that instruction is given throughout the entire year, the vacations of the principals and instructors being arranged so that there is no interruption in the work of the schools. This affords an opportunity for mechanics and others who have dull seasons to take up a course by mail and make good use of what would otherwise be waste time.

THE WESTERN STOVE TRADE.

Western stove manufacturers are greatly pleased with the conditions prevailing in their section of the country. The demand for heating stoves is always affected by the weather during this month. The days have been sufficiently cool to cause stove buyers to seriously think of the necessity of providing artificial heat and the demand has therefore been decidedly stimulated. The orders now being received are keeping shipping departments busy and the prospects are bright for a continuance of the active trade. The reports received from various manufacturers indicate that thus far this year the business secured is considerably in excess of the corresponding time last year.

The scare caused by the long drought during the summer months operated to the advantage of the stove manufacturers located nearest to the districts affected. Dealers in those sections were naturally very conservative and were disposed not to place large orders for future delivery. Now that stoves are urgently needed, the dealers are to a considerable extent sending their orders to local manufacturers to secure delivery as speedily as possible. No complaint is heard about prices. Dealers are not making every effort, as they sometimes do, to secure lower prices, but are more concerned over the desirability of receiving their stoves quickly. The trade is further running into a larger proportion of the better class of goods. It is remarked in this connection that the trade in base burners shows distinct improvement as compared with preceding years. This is undoubtedly due to the good financial condition of the farmers and of all trades closely interwoven with their interests. The reports from the drought stricken sections show that the damage to the corn crop was not nearly so great as at first estimated. Instead of the crop being entirely destroyed, even the worst sections are now believed to have raised nearly if not quite half a crop, which is bringing double the price of the corn produced last year, and thus the agriculturists are receiving almost as much money as though they had raised a full crop. This explanation of the continued good demand coming from farmers is borne out by the experience of the hardware trade. The jobbers of hardware have found no falling off in the demand for their goods, and are looking forward to a heavier fall trade than ever before known. This is the view taken by even the jobbers in the Missouri Valley, who would be more seriously affected by a short corn crop than those of any other locality in the West.

The Philadelphia Stove Trade.

The stove trade in Philadelphia has developed considerable activity during the past few weeks. The fall trade has come in with a rush, and the various manufacturers and dealers are hard at work making deliveries. The delay in getting the different lines of goods into the construction of which sheet steel and sheet iron enter is very marked, but it is expected that this condition will rapidly adjust itself as the cause of the delay in the delivery of raw materials is removed. Trade during the past week is reported to be brisk and well distributed, cook stoves and ranges being in about equal demand with heating goods. The indications are favorable for a very prosperous season in stoves and heating goods.

The Kelsey Furnace Company, Syracuse, N. Y., are sending out a dainty little pamphlet entitled "Summer Heat," which they state is the best kind of heat one could have in the winter time, if such a thing were possible. They say "If we could take the fresh, pure air of a bright and brisk summer's day and bottle it up and lay it away to be distributed in the home during winter in proper quantities, it would be the ideal kind of warm heat to enjoy." While this is not practical the company state that the heat produced by the Kelsey Generator comes the nearest to a pure summer like atmosphere, and they refer to the fact that they have hundreds of good words to this effect from users of their heating apparatus.

THE CAUSE OF MANY STOVE TROUBLES.

No doubt many of our readers read the article in *The Metal Worker*, entitled "A Remedy for All Stove Troubles," which has induced a correspondent who has had a wide enough experience in the stove trade to win respect for his opinions, to contribute the following observations:

Feeling that many of the readers of *The Metal Worker* of September 21 will derive benefit by cutting out the article giving "A Remedy for All Stove Troubles," I desire to make a supplement to it. Too little attention has been paid by manufacturers to explaining why a stove pipe collar of a certain size is adopted for use in connection with certain stoves. In consequence, many stove dealers, stove jobbers and tinsmiths who have to get out the stove pipe for connecting stoves with chimneys look upon it with little respect, and some conclude that the size has been arrived at in some arbitrary manner, and that some other size would answer the purpose equally well. This has cost the whole stove trade a great deal of money. Experience has demonstrated in many instances that the size of the stove pipe collar might be smaller without inconvenience, but this is only true where the draft in the chimney is exceptionally strong. Where there is a weak draft the reduction in the size of the stove pipe, which has been customary, is sufficient to destroy the operation of the stove. In many sections of the country stove pipe is only made in the full inch sizes, and such pipe as 4½ and 5½ inch is not found; consequently, when a stove has a collar calling for a 6-inch pipe and the pipe is reduced to 5 inches, the reduction in the smoke carrying capacity is not as 6 is to 5, but as 36 is to 25, as circles are compared not according to the diameter, but according to their area. From this it will be readily seen that to reduce the pipe 1 inch in diameter is to reduce its smoke carrying capacity one-third. In the course of a number of years the use of full sized pipe called for by a pipe collar may cost a stove dealer as much as a few dollars, while the failure of one stove to operate will cost him in the loss of trade, loss of time, loss of prestige and loss of temper as much as several dollars.

In many cases where a chimney has a slow draft, benefit has been found by enlarging the smoke pipe, and where the stove has a 6-inch collar to flare it so that the upper end will accommodate a 7-inch pipe and carry a 7-inch pipe to the chimney. This allows a greater volume of the hot gases to enter the chimney and raises the temperature, and in the end creates a draft. The draft in a chimney is naturally due to the difference between the weight of a column of air inside of it and outside of it. Consequently, the sooner the chimney is heated up so that the air traveling through it is kept at a high temperature, the sooner the draft of a sluggish chimney will be improved. An illustration that has been used in connection with the reduction in size of a stove pipe collar on a stove is that a man can live if another man holds his thumb rather tight on his windpipe, and if the pressure was continued might live for years, but the comfort that attends the removal of the pressure only corresponds with the relief of the substitution of a full sized stove pipe for a reduced pipe. The workings of a chimney to many are a sealed book and difficult to understand; in consequence, it is best not to offer any impediments.

The following experiment may afford help to some unfortunate tradesman: A local dealer had connected an apparatus having a 12-inch pipe with a chimney having a flue 6 x 8 inches in size; in consequence it was impossible to raise steam in the apparatus, although the coal burned, and the owner thought that inasmuch as the coal was burned heat to make steam should be generated. A visiting engineer was informed of the trouble, which he immediately charged to the size of the flue, but expressed a willingness to visit the building and see if any remedy could be suggested. He found that the connection was made by running a 12-inch pipe into a 12-inch hole cut in the chimney base, leaving an opening for the entrance of smoke about 6 x 12 inches instead of 12 inches in size. This hindered the entrance

of the smoke at a point where it was supposed to enter and rise. He advised that the base of the chimney be cut out for a space of 18 inches high and 9 inches wide on the front and tapering to the back of the flue, then to fit a tapering sheet iron flue base to the opening thus made, with a 12-inch round collar for the smoke pipe. This was made of sheet iron and put in place, fastened to hold it securely and then cemented air tight. This experiment was made in order to save the expense of building a chimney, and inasmuch as the flue had a good natural draft, the device was effective to the extent that no difficulty was experienced in raising steam after the apparatus had been fired with the new connection, although the full efficiency of the boiler could not be derived with a flue of such small capacity.

TALES FROM THE WALDORF-ASTORIA.

BY JEEMS.

A short time ago several of the up-State stove manufacturers were in the Waldorf-Astoria *café* discussing the good cheer that "Oscar" provides for the poor and needy from that section. After they had sampled the goods and pronounced them perfect they called for the smokes and, forgetting all about stoves, plunged into such a real pleasant time as always ensues when the animals are properly fed and watered.

If you want to get the stove manufacturers into the right frame of mind and satisfied that life is worth living and prices must be maintained, feed 'em. There is nothing like a good stock of Waldorf or Squantum feed stowed under their jackets to produce it. The crowd is no good under Banting diet. Nothing ever came from it.

In this case wonderful tales were told, but, singular to relate, not one in which stoves were referred to. They were merely personal experiences of adventure, some of which were quite marvelous.

"Just to think of it, boys, I had the darndest thing happen to me last night," said a Rochester manufacturer. "I and my friend started for Weber and Fields'; went up to the box office and asked for two seats. They said the house was sold out; no seats, but told me I could get some from the speculators outside. So we went out and found a chap who said he could fix us up on the bald head row. He said he knew we had sporting blood in us. I said, 'how much?' 'Five dollars.' I pulled out my wad and paid him. We went into the show; were ushered right down to the finest seats in the house and were going to squat when the usher said: 'These tickets are no good; they are for next Saturday night.' You can imagine how I felt; all the chorus girls looking right down on me, taking me for a yap. We all sailed up the aisle. You bet I was mad, but what was the use of making a fuss. I knew I was buncoed.

"I got out on the sidewalk and if I didn't spot the galoot who sold me the tickets. Say, do you know that fellow was about 6 feet 6 and weighed about 400 pounds. But I walked square up to him and sang out: 'Cough up.' Do you know he just looked across the street. I waltzed around him and told him to 'cough up' again and he had the gall to ask me 'what for?' I was going to smash him; I was so mad, you know. The fellow actually denied that he sold me tickets and said he never saw me before! I was furious! 'Cough up,' I yelled, 'or stand there;' and I made a dive for a cop. Just then a sleek looking cove said: 'My friend, we don't want any trouble. I will pay it. Here's your five.' For two pins I would have smashed them both; I was so wrathy.

"Just as well you did not. You would have only got to court; those fellows would have said you pulled a razor on them," said a Utica furnaceman. "You were in luck. Think of me. I was on my way from Chicago last week. Coming home on the car I was accosted by a very pleasant gentleman, who asked me if I was going East. I said 'yes,' and he opened on me that he was bound that way, but he was $20 short, and asked me for the loan of it. I said I was short myself, 'but here is $10, if it is of any use to you.' He thanked me very kindly and was profuse in the matter; said that ten was no good; he needed $20. Well, he was such a nice sort of a fellow I thought the matter over and let him have $20. He was awfully nice about it, by gosh, and was very grateful.

"In the course of the evening I asked the conductor where my friend was. 'Oh, he done up two other gents and got off at the last station.'"

The Simpson Multiple Action Heater.

We present in the accompanying illustration a general view of what is known as the Simpson multiple action heating stove, just placed upon the market by the Simpson Stove & Mfg. Company of Twenty-sixth street and Liberty avenue, Pittsburgh, Pa. The heater derives this name from the fact that it combines three systems of heating—namely, radiation, reflection and hot air circulation. The object of this combination is to obtain the greatest amount of heat with a minimum consumption of fuel, which in this case is gas. The style of construction is what is generally known as "water tight." One of the most important features is the fire box, which is corrugated so as to give a greater heating surface. It is cast in one piece so as to prevent the gases mixing with the hot air and escaping into the room. The burner is so made that one part can be operated independently of the other, each part being provided with separate mixer

The Simpson Multiple Action Heater.

and controlled by separate valves. The burner is known as the Multiple, which is used with the company's Nos. 21 and 22 Simpson gas heater with gratifying success. The construction is such that each front grate bar constitutes a burner, which directs the flame against the gas fuel from the front, while the base burner directs the flame from the back, thus making, it is claimed, a much quicker heat than where the base burner alone is employed. The burners have drilled holes and can be regulated separately as circumstances may require.

All parts exposed to the flames or active heat are made extra heavy, so as to prevent warping or cracking, this being especially true of the fire box. Five tubes are used to carry the hot air away from the heated surface of the rectangular fire box, the center tube being 6 inches in diameter and is utilized as an air flue as well as a flue to carry off the products of combustion. The principle is similar to that of the Rochester radiating drum, one pipe being inside of the other. An examination of the engraving presented herewith will give an idea of the general scheme of decoration. The ornamental sides and back incasing the fire box in which the burner and gas fuel are placed is perforated, exposing a larger surface to the cold air than would be the case in a single jacketed stove. The manufacturers claim that the construction here shown is sufficiently powerful to heat two rooms for what it usually costs to heat one.

A Voice from California.

Frank Van Uxem, formerly of Richmond, Ind., and now eating the lotus on the balmy shores of the Pacific, writes us from Oakland, Cal., inclosing an extract from a letter to a friend in the town of Richmond, where for 30 years he was in the stove manufacturing business "enjoying," as he says, "the visits of *The Metal Worker* for the greater part of that time." Mr. Van Uxem is careful to explain that from the statement that he has "seen 90 May mornings," it is not to be inferred that he is that many years old. He believes that there are enough of his old business friends among our readers to make the publication of his letter worth while. It runs as follows:

"My Dear X.:

"I am in receipt of the clipping, and I am moved, I may say deeply moved, in reading the slip:

> WANTED.
>
> Young or middle aged man that understands stoves and furnaces, for salesman at the Peter Johnson Stove Store.

And has it come to this? 'How have the mighty fallen!' Those captains of industry in the stove business in Richmond—Underwood, Le Fevre, Potts, Bargis, Nordyke, Hoffman Nye, Starr, Peterson, Johnson, Leeds and the undersigned; all but two dead or removed, and their mantles fallen on hodge podge dealers in crockery, or tape and overalls. Oh, it's too bad! I don't wonder a MAN is wanted who 'understands stoves and furnaces' to restore the business to its former standing and dignity. Can he be found?

"I trust so; but not in the person of yours truly. Oh, no! He has had enough. Did he not for 30 years go in and out before the people offering his wares so 'scheap as never vas,' and though men may come and men may go, must he go on forever? Give him a rest; let the balmy airs of California still fan his brow. Seek not to entice him from a land that is six months June and six months October. No more call him on a zero morning to explain the advantages of the 'best refrigerator on earth,' or some sweltering summer afternoon telephone for a man to be sent at once to see about the furnace. If the roof don't bake or the cook stove leaks don't bother him.

"The *tile* is off his head; the *mantel* fallen from his shoulders, and *grate* things are no longer to be expected of him. While not exactly *stove* up he is on the shelf. Hardware has had its effect. He has seen more than 90 May mornings, and no longer looks forward to the approaching autumn as the season of heaters and stove pipe. The spring salesman cannot beguile him with stories of improved gasoline cookers; and the freezer man would only meet an icy stare upon opening up his wares.

"These things are left behind—bid adieu, not *au revoir*, to

Sympathetically yours,

"Frank Van Uxem."

Detroit Stove Works.

The catalogue which is being sent out by the Detroit Stove Works, Detroit, Mich., is a volume of 300 pages substantially bound in heavy board covers and illustrates their leading lines of Jewel stoves and ranges. It is known as No. 71, and covers the season of 1901-1902. The arrangement of the matter gives evidence of careful attention to the requirements of the trade, and the assortment of goods presented cannot fail to interest the enterprising and wide awake dealer. The company point out that while the statements concerning the goods illustrated are brief, they are complete and cover the actual facts. They say that when a stove is No. 8-20 it means that it has a 20-inch oven and not one measuring 19 or 18 inches, and that when they say a heating stove has a 14-inch fire pot it means that it is 14 inches full, inside measurement. The grades of iron used in the construction of Jewel stoves are carefully selected and chemically tested before being melted, and no stoves are offered for sale until they are thoroughly fire tested.

In the opening pages illustrations are given of the special features to be found in connection with the Jewel goods, the leading places being occupied by the Premier Jewel, Domestic Jewel and Leader Jewel steel ranges. One style of Jewel steel range is especially adapted for hotel use, having a number of ovens and fires, according to requirements. The cast goods embrace cooks and ranges of handsome exterior and occupy something over 140 pages of the catalogue. The remaining portion of the volume is given up to heaters which embrace many handsome constructions embodying the latest improvements and adapted to meet a wide range of requirements. Jewel gas ranges in extensive assortment, hotel ranges, gas radiators, broilers, hot plates, warm air furnaces and miscellaneous goods are also presented. Several pages at the close carry skeleton cuts of stoves and ranges for the purpose of facilitating the ordering of stove repairs by the dealer. A comprehensive index to the telegraphic code, alphabetically arranged, is an important feature of the volume.

Some New Gas Stoves and Ranges.

An attractive catalogue of 64 pages which has just been issued by the Reineke-Wilson Company, with offices and salesrooms at 13 to 19 Wood street and 242 to 254 First avenue, Pittsburgh, Pa., presents numerous illustrations of the leading lines of gas stoves, ranges, fire place heaters and natural gas appliances which they manufacture. This is the company's tenth annual fall catalogue and is known as No. 29. Especial attention is directed to their new lines of heating stoves for the season of 1901-1902, and particularly to the Century, Mystic and Keystone Reflex Heaters.

The Century stoves are made in four sizes with two different styles of finish, and in three varieties—the reflector, the asbestos back with base burner, and the gas fuel stoves. These are furnished with either open or closed fronts and are also made as fire place heaters. In all cases the cold air is taken in at both ends of the heating drum through openings in the side castings, thereby insuring a constant circulation of warm air. The fire place heaters offered under the name Century are handsomely ornamented and with the mica front make a brilliant appearance, especially when the coals within are all aglow.

The Mystic is a rather odd conception in the way of a heater and is intended for using natural or artificial gas. It is referred to as a stove which combines the important features of an atmospheric or blue flame burner with a reflecting surface. The body of the stove is of polished blue steel with nickel plated corner pieces, name plate and trimmings. The flames from a special Bunsen burner play against a cast iron deflecting dome and are thrown back by a highly polished copper reflector, thus presenting a most pleasing and novel effect. The flames are surrounded by a current of heated air at a very high temperature, which prevents the cooling of the flames, thus insuring an odorless stove, whether or not it is connected with the flue. A supply of cold air enters through a series of tubes at the back of the stove, passes into a heating drum and is discharged through perforations in the top of the stove. By this means a rapid circulation of air throughout the room is created and gives a well ventilated room without any cold corners.

The Keystone Reflex, also intended for natural or artificial gas, is a reflecting stove having a body of planished iron trimmed with nickel plated cast iron corners, front arch piece and other ornaments. The burner concealed in the top of the stove is made of a series of specially imported lava tips, and, it is claimed, will not corrode. The sides of the stove are lined with planished copper, the sloping reflector being planished copper corrugated, and all highly polished.

Attention is also given in the catalogue to the Star gas heaters. the Majestic blue flame radiators, fire place heaters, gas logs, audirons of several varieties, grate fronts, portable baskets, asbestos material, burners, lamps, wire guards, &c. A telegraphie code for gas stoves and heaters is not the least interesting feature of the publication.

ODD PLATES.

THE BUCKWALTER STOVE COMPANY, Royersford, Pa., are distributing among their friends in the trade a four-page folder carrying an illustrated description of the Highland Oak, an entirely new single and double heater intended for using hard coal, soft coal, coke, wood, or any other material of a combustible nature as a fuel. Special reference is made to the fuel gas generating device, which, it is claimed, contributes greatly to efficiency, economy, eleanliness and healthfulness. An air duct or tube encircles the top of the fire pot, admitting heated air in small jets into the fire chamber to mingle with the gases liberated from the fuel. This, it is claimed, results in the perfect combustion and actual consumption of the gases, thereby converting them into heat instead of allowing them to pass out unconsumed through the smoke pipe and chimney. The Highland Oak is offered in three sizes as a single heater, and three sizes as a double heater, and is furnished with the well-known Ransom duplex grate. The company state that they can also furuish plain grate, which is an improved form of the center discharge type.

THE FAVORITE STOVE & RANGE COMPANY, with main offiee and works at Piqua, Ohio, set forth the merits of the Buckeye Favorite Heating Stove in a four-page eirеular which they have issued. This Stove is made in three sizes and is intended for using soft coal as a fuel. The manufaeturers refer to its durability as well as to the fact that it will hold fire a long time and will operate most satisfactorily.

HAGEY'S KING HEATER is the subject of a four-page folder which is being distributed by the Hagey Stove Company of St. Louis, Mo. It is intended for burning wood as a fuel and is referred to as very economical. The circular gives directions for setting up the Stove in order to give the most satisfactory results in operation.

"THE Mystic Sunshine Ranges, made at the Sunshine Stove Shop," furnish the basis of an attractive folder which is being sent out in eard case form by the Reading Stove Works of Reading, Pa. Reference is made to the graceful shape and ornamental design of this Range, and to the important part which is played by the highly finished nickel ornamentation. The manufacturers state that it has been designed by master artists, and is made by the most careful workmen of the best material. It is constructed for people who want the best, and its sueeess "lies in the fact that it is made right—made of the right material and offered at the right price." In addition to all this they say that "as a master achievement attained through years of experience and well directed labors the Mystic Sunshine Range is a shining example." The folder is inclosed in an envelope, which is a *facsimile* of one of Uncle Sam's mail pouches.

THE MARCH-BROWNBACK STOVE COMPANY of Pottstown, Pa., are sending to Stove dealers handlling their speciailties a card which is in the nature of a guide to those using Oak Stoves and Heaters manufaetured by them. The card is provided with an eye for hanging up and carries reduced illustrations of 12 varieties of Oak Heating Stoves.

IN the jubilee number of the New York *Times*, issued in celebration of its fiftieth anniversary, J. Q. A. Butler is mentioned as one of the eitizens of New York who has been in business for 50 years or more. Mr. Butler is well known to the Stove trade and has an office at 117 Beekman street, where he makes a specialty of the Stoves and Furnaces of the Magee Furnace Company, Boston, Mass.

THE F. E. MEYER & BROTHER COMPANY of Peoria, Ill., are sending to the trade their Handy Furnace Estimate Book No. 10. This book is suitable for carrying in the pocket, and, in addition to being a catalogue of their Handy Furnaee Pipe and Fittings, has ou every other page a blank form for use by furnaeemen in making estimates of the cost of furnace heating plants. The book ineludes price-lists of Wall Stacks, Boots, Offsets, Elbows, Register Boxes, and a complete line of Round Pipe and Fittings; also Registers and Furnacemen's Supplies. It incloses circulars devoted to the Weir All Steel Air Blast Furnace for hard and soft coal, and a eircular devoted to Skylights, Finials and Weather Vanes.

THE CANTON STEEL ROOFING COMPANY, Canton, Ohio, report a very large trade on their Registers, much larger, in fact, than they have been able to take care of. This is partly due to the fact that their Register is a novelty. Their trade is mostly with retailers, who are ready to take all they can make.

THE Boston office of the Central Oil & Gas Stove Company, of which Harvey N. Brooks is manager, has been moved to new and fiuer quarters at 17 Washington street, that city.

A CARD which is beiug sent out by the Simpson Stove & Mfg. Company of Pittsburgh, Pa., calls attention to the Simpson Gas Heating Stoves, and states that "as a profit bringing proposition they were always hard to beat, but this year they are better than ever." Referenee is made to the one-piece cast iron fire box of the Multiple Action as being a new feature, and the statement is made that it prevents the poisonous gas products from gettiug into the room. The company request those dealers who are interested in good values made by quality and price to write at once for a copy of their new catalogue.

SOME circulars which are being distributed by the Walker & Pratt Mfg. Company of Boston, Mass., relate to the Charm Crawford range, the Crawford Oak and the Clover, an attraetive sheet iron cylinder surface burner made in four sizes. It has draw center grate, capacious ash pan, revertible back pipe with damper, elinker door and draft slide operated by a screw. The linings of the stove are carried up one course above the level of the door. The Crawford Oak is a new design of handsome exterior and is intended for using as a fuel "anything that will burn." The stove is carefully made and fitted, has a heavy steel body and can be furnished with a double fire pot when desired. Either a draw center or triangular grate ean be furnished, and any part may be renewod without the necessity of purchasing the whole grate. In regard to their New Style Home Crawford the company announce that it is always shipped with tea rail unless otherwise ordered. The new style mantel goes over the new steel tea rail, the latter being necessary in order to set up the mantel.

THE ROBINSON FURNACE COMPANY, 107 Lake street, Chicago, report the demand for their furnaces far surpassing anything in their experiencc. They are employiug double the force of men on their pay roll last year, and are compelled to keep them working at night in the eudeavor to fill orders now on their books. Every day briugs a fresh crop of orders, and the outlook is very favorable for the continuance of this heavy trade. The compauy were fortunate in having secured a large stock of tin plate and steel before the steel strike cut down the supply of these materials and caused the great advance in prices experienced sinco then.

THE WIRETON HEATING COMPANY, 40 Dearborn street, Chicago, have sold over 800 of their Wireton Time Regulators in the past two months. This Regulator, which is a cloek arrangemeut for opening drafts at a definite time, has been received with most gratifying favor by the heating trade. The Regulator is sold at such a low price that auy housekeeper can afford to purchase oue, and the novelty of the device has recommended it to all classes of people. The company are pleased at the results so far secured and are making arrangements to supply a much heavier demand, which they feel sure will be realized in the near future. They further report an exceptionally large trade in the Auer Side-wall Register, for which they are exelnsive sales agents in the States of Illinois, Wisconsin, Minnesota, Iowa and Missouri. Not only are these branches of their business in

fiue conditiou, but the demand for the Quaker Furnaces which they manufacture is so heavy as to keep their furnace department running to its full capacity.

The American Radiator Company, Chicago, have received from Robert C. Clarkson, the well-known heating engiueer of Philadelphia, a facetious letter relating to the company's catalogue recently issued. This letter very ingeniously interweaves the names of the principal officers of the company and the names of their various styles of radiators, making an extremely entertaining epistle. The letter would be published in *The Metal Worker* except for the extreme modesty of the officers whose names are mentioned. This is greatly regretted, as the trade would undoubtedly be delighted if they had the opportunity to read the letter.

The Duplex Mfg. Company, South Superior, Wis., advise us that they have purchased the plant formerly used by the South Superior Stove Works, together with all the patterns, material and manufactured goods. The company are manufacturers of Wind Mills, Feed Mills, Stock and Reservoir Tanks, Tank Heaters, Iron Pumps, &c., aud bought the stove plant principally to increase their facilities in the lines iu which they have been engaged. They state, however, that they will also engage in the manufacture of Stoves, probably commeucing by manufacturing somc of the best selling goods made by the old company, and expect to grow into the business as rapidly as the outcome will justify. The company needed additional room for their growing business, even if they had given the manufacture of stoves no consideration.

The Excelsior Steel Furnace Company, 38 West Monroe strcet, Chicago, report a phenomenal demand for Furnaces and Furnace Fittings. Not a week has passed since January 1 which has found them filling their current orders, the demand constantly running in excess of their ability to handle it. This demand has come from all over the country, and they have not only shipped Fittings but Furnaces to customers in New England and other localities along the Atlantic seaboard. This is their first year for the manufacture of Adjustable Elbows, and it has been a remarkably heavy one. They engaged in this brauch of business at a most auspicious time. They belleve that the heavy demand for their products will continue well up to the holiday seasou.

The branch of the Art Stove Compauy at 79 and 81 Jefferson street, Chicago, is enjoying a heavy trade. The company this year greatly enlarged their facilities in Chicago and added to their liue a number of patterns which have proved to be particularly well adapted to the requirements of the local trade. The company's business has been especially heavy iu Steel Ranges and Base Burners.

Thomas J. Hogan, secretary of the National Association of Stove Manufacturers, has returned to his headquarters ln Chicago after an absence of several weeks, duriug which time he traversed the country from Kentucky to New England, visiting numerous Stove manufacturers in the iutervening territory. Mr. Hogan reports that the mauufacturers of all districts visited are extremely busy and that the Stove trade has seldom been in better condition. Prices are well sustained, the shortage in steel having had quite an effect in stiffening the prices of those who have been in the habit of cutting under the regular rates prevailing in the trade.

The Wilke Glass Lined Refrigerator.

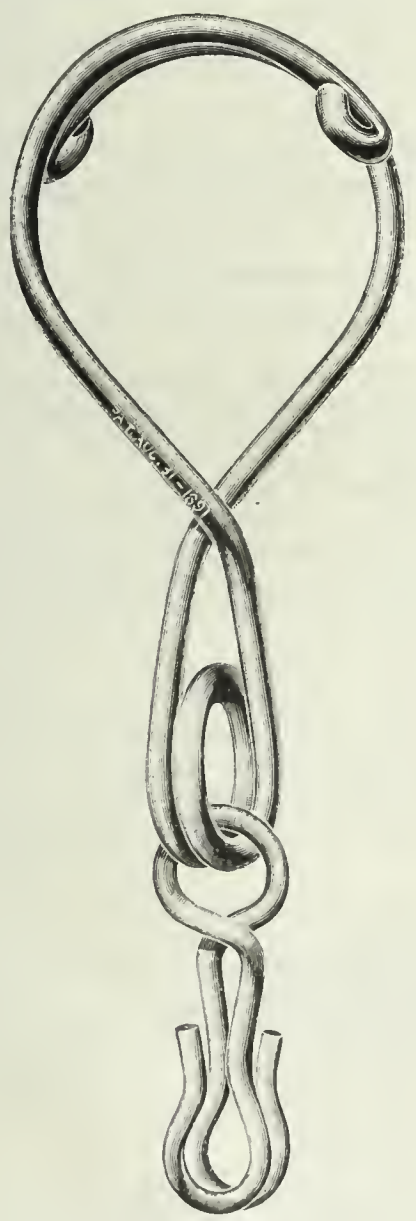
The Wilke Glass Lined Refrigerator.

The Wilke Mfg. Company, Anderson, Ind., have brought out refrigerators which are completely llned with glass, built with exteriors of porcelain or tile or of polished oak. An illustration is herewith given of one of the new refrigerators which conveys some impression of the attractiveness which the glass lining imparts. The glass used for the lining is regular plate glass ½ inch thick, taken as it comes from the kiln mouth, and is etched or opaqued by the refrigerator company. The color is a very light green, which ls suggestive of cool cleanlincss. The glass is assembled in forming the interior so that glass does not come in contact with glass, which would cause spalling or crumbling on the cdge. A special cement is used for this purpose, which has

been developed by the company after long experiment. The cement is non-odorous, water proof, antiseptic and hard settling, yet allows for the expansion and contraction due to varying temperatures. The entire top, bottom, sides, back, doors and front partitions are lined with glass in this way, so that no wood or metal is exposed to the action of the contents. The very smooth surface permits it to be easily cleaned. The provision shelves are coated with Purity cold water enamel of a brilliant white color. The company state that the glass lining is so strong that it will stand all reasonable use and some abuse. They have shipped several of these glass interiors long distances and thus far have not had a case of breakage in transit. They claim that the new refrigerator is the most sanitary as well as the most attractive refrigerator thus far brought out. Special attention has been given to insulation to secure economy in the consumption of ice. This line of refrigerators will be known as the Crystal line, will be furnished in all the usual sizes, and will be sold at the same prices as the company's tile lined refrigerators, which they will still continue to make. The glass lined models are an addition to their regular line.

Safety Ladder Hook.

The Taplin Mfg. Company, New Britain, Conn., and 90 Chambers street, New York, have just put on the market the safety ladder hook, here illustrated full size.



Safety Ladder Hook No. 0.

It is designed particularly for the use of painters, fruit pickers or any persons who need to suspend a can, pail or similar vessel by means of a wire bale. It is made of spring wire, the ½-inch space between the parallel wires at the top being sufficient to allow it to be pushed either side of rung of ladder or limb of tree, when a quarter turn locks it instantly. The device for holding the bale is also such that the can is securely held and easily released with a quarter turn of the bale.

Stove and Hardware Dealers.

The E. Z. Mfg. Company of Galesburg, Ill., have the somewhat unique distinction of employing a traveling saleswoman. The company are manufacturers of Mouse and Rat Traps. The lady in question recently went the round of the trade in New York City in the interest of her firm.

John T. Burriss, Anderson, S. C., is reported as having had an exceedingly busy summer in his Roofing, Tinning and Plumbing business. Mr. Burriss expects a large fall trade in Stoves and Tinware. He has arranged to hold on October 12 a baking contest between girls of 14 years of age and under, the prize for which will be a beautiful nickel plated Stove. The winner will be chosen by a jury of five disinterested ladies of Anderson. The plan bids fair to be a great success, and Mr. Burriss says that it is making things quite lively for his competitors.

Russell, Burdsall & Ward Bolt & Nut Company, Port Chester, N. Y., have just issued a handsomely printed illustrated catalogue (126 pages) of Bolts, Nuts, Rivets, Screws, Stove Rods, Turnbuckles and Washers. A great variety of the several classes is shown, especially of Bolts, Nuts and Screws. This company are the successors of Russell, Burdsall & Ward, established 55 years ago, and the Port Chester Bolt & Nut Company, whose existence measures a third of the time. Extensive additions are being made to their plant.

Hudson & Nuckols have succeeded Hudson & Co., dealers in Stoves, Tinware, &c., at Murfreesboro, Tenn.

Hammacher, Schlemmer & Co., who have been established at 209 Bowery, New York, for over 50 years, are distributing an attractively prepared catalogue illtrated in colors, showing their line of Tool Outfits for home use. The firm lay particular stress upon the quality of the goods they furnish. The outfits are not made of cheap wood working Tools to sell at a price, but are composed of absolutely high grade Tools, inclosed in thoroughly well made and well furnished cabinets, and are of real value as practical working Tools. The cabinets are offered in a variety of sizes and styles, and are priced from $5 to $100.

R. P. Viland, in the Hardware, Stove and Tinware business in Slater, Iowa, has admitted a partner and the style is now Viland & Skortman.

Tucker & Dorsey Mfg. Company, Indianapolis, Ind., have issued a catalogue illustrating their line of Hardware and Wooden Ware Specialties, including Slaw, Vegetable and Kraut Cutters, Towel Rollers, Phœnix Hat, Coat and Clothes Rack, Iron Hook Coat and Clothes Rack, Wood Pin Hat and Coat Racks, Towel Racks, Knife and Fork Trays, Lemon Squeezers, Columbia Mop Wringer and Combined Step Ladder and Chair. It also represents the Indianapolis Washing Machine, patents on which are pending.

Composition of Glass.

Glass, in a technical sense, is understood, says the *Glass Budget*, to be a silicate or a silicate mixture which at a high temperature is a thin fluid, and which as the temperature is reduced passes to a semifluid and then to a solid condition. It is ductile in its fluid and semifluid state, during which it is shaped into desirable form by blowing, pressing, casting and rolling, drawing, welding and spinning. Opaque when at a white or red heat in its molten condition, it passes, upon cooling, into translucence, transparence or pellucid crystalline form, according to the degree of purity in the materials of which it is composed. These are, in the main, silica or glass sand, which constitutes from 50 to 70 per cent. of the basis matter of all glass. Separately, silica is insoluble in attainable furnace heat, and therefore solvents are added in the form of potash, soda ash, lime, lead, niter, &c., and when colored glass is desired various metallic oxides are added, as oxide of tin or cryolite for milk white, the oxides of gold, copper or selenium for red or ruby, cobalt or zaffer for blue, carbon for amber, chrome for green, cadmium for yellow, &c.

Meeting of German Heating and Ventilating Engineers.

FROM A SPECIAL CORRESPONDENT.

The third meeting of the Society of German Heating and Ventilating Trades occurred at Mannheim, August 12 to 14, 1901. The sessions were held in the lavishly decorated hall in the City Park.

MONDAY, AUGUST 12.

The first meeting was called to order by Professor Hartmann of Berlin, who expressed his satisfaction in seeing so large a number present who had attended the first meeting in Berlin in 1896, and the second, in Munich, in 1898, as well as over the many new faces present, to all of whom he bid welcome. He explained the objects of the meetings as being for the mutual exchange of ideas and knowledge of the important subject of heating and ventilation.

Professor Hartmann dwelt on the great interest manifested in the doings of the society by the different Imperial and Royal State Ministries, as well as the many city administrations, who sent as representatives Government architects, inspectors and municipal heating engineers, those present coming from Russia, Austro-Hungary, Switzerland, Belgium, Holland, Denmark, Sweden and Norway, as well as from all the kingdoms and duchies of the German Empire. The attendance numbered 182. On behalf of the engineering branch he thanked the contracting (master fitters) branch for meeting with them.

Engineer Vetter of Berlin replied for the contracting branch, and said among other things: "We must work together. We cannot say, 'Here is the place for theory, and there for practice;' but we must strive mutually to reach the goal every serious heating and ventilating engineer is after. We meet the learned members, and try in practice to prove their theories. If we stop to think how greatly the business of heating and ventilation has grown, the large number of skilled workmen employed, how important a part the constantly rising price of fuel plays in our household economy, and how the matter of smoke and soot prevention is no less important to the health of our people, we, the representatives of this branch of the art, are also entitled to a 'place in the sun' of the technical and industrial world."

Dr. Strauss, the representative of the Grand Duke of Baden, bade the members welcome in the name of the Grand Duke, in a glowing speech, in which he expressed the royal as well as his own interest in the proceedings, and Burgermeister Martin welcomed all in the name of the city of Mannheim.

As the society has no permanent organization, the following were named as chairman and vice-chairman of the three meeting: First day, Director Ugé of Kaiserslautern and A. Sulzer-Grossmann of Winterthur, Switzerland. Second day, Inspector Foltz and Professor Meter, both of Vienna. Third day, Professor Rietchel and Professor Hartmann, both of Berlin.

Professor Ugé took the chair, and after a short expression of thanks, called on Professor Rietchel of the Royal Technical High School of Berlin, who read a long and interesting paper on "The Present State of the Science of Heating and Ventilation." This paper, though long, was intensely interesting and commanded the closest attention.

Engineer Vetter of Berlin then read a paper on "The Development and Value of the German Society of Heating and Ventilating Trades."

Prof. Dr. G. Recknagel of Augsburg read a highly scientific article on "The Cooling and Heating of Inclosed Spaces," based on exhaustive tests he had made.

The last paper of the day was by Prof. Edward Meter of the Imperial and Royal High School in Vienna, entitled "The Warming of the Imperial Court Library in Vienna for the Visit of the German Crown Prince." This article was full of interesting details and useful data.

The afternoon was spent in inspecting the heating and ventilating apparatus in the new Gymnasium, new Hotel Pfaelzer Hof and the new Stock Exchange, all of which are model jobs. To those who wished the opportunity was given to inspect the newly equipped cast iron boiler plant and foundry of Rud. Otto Meyer, as well as the radiator foundry and enameling works of the Mannheimer Eisengiesserei Actiengesellschaft. The hydraulic molding machines in the first named establishment excited much interest and favorable comment, as did the arrangement of the works generally. As is usual on occasions of this kind in Germany, there was ample provision, both solid and liquid, made by these firms for the inner man.

At night a grand banquet was served to all present in the large hall of the City Park Building.

TUESDAY, AUGUST 13.

The second meeting was called to order at 9 a. m. by Inspector Folz of Vienna.

The first paper was read by Chief Engineer Tichelmann of Dresden on "Central Station Hot Water Heating," in which he explained in detail a very extended system of this kind of his own design, and referred to some American systems.

Engineer Johannes Kelling of Vienna read a lengthy detailed article on "Ventilating and Heating of Hospitals," in which he gave much interesting and useful data as to sizes of pipes, ducts, &c.

Professor Junkers of the Royal Technical High School in Aix-la-Chapelle, read an elaborately illustrated paper with comparative tables, entitled "The Present State of Gas Heating."

Engineer Herm. Recknagel of Munich read the last paper of the day, on "The Removal of Dust in Factories."

The afternoon was spent in a trip through the wonderful harbor of Mannheim and a short trip in two steamers on the river Rhine, as the guests of the city of Mannheim, which was highly interesting as well as enjoyable.

WEDNESDAY, AUGUST 14.

The meeting was called to order by Professor Rietchel.

Director Ernst Schiele of Hamburg read a paper on "Cast Iron Boilers for Hot Water and Low Pressure Steam Heating," in which he demonstrated their superiority for these purposes.

G. A. Schultze of Berlin exhibited electrically regulated dampers, also thermometers, to show the room temperatures at a central plant. With these regulators the dampers in any part of a building can be set at any desired angle, from the engineer's room, with absolute certainty.

Engineer Vetter of Berlin then exhibited similar dampers regulated or set by water pressure, with which each stroke of a pump turned the damper one-sixth of the distance from full open to shut.

Civil Engineer O. H. Erich of Hamburg then read a paper on "The Ventilation of Residences and Business Buildings," in which he dwelt on the necessity of ventilation, &c.

After an executive session farewell speeches were made by Dr. Strauss for the Grand Duke of Baden, and Professor Rietchel for the society, which ended the business part of the programme.

The afternoon and evening were spent at Heidelberg Castle, the old ruin being beautifully illuminated for the occasion.

The next meeting of the society will probably be held in Hamburg in 1903.

BLAKE & ANDROS, 42 Oliver street, Boston, Mass., are sending to the trade a neat pamphlet in the interest of their Crescent Steam and Hot Water Heaters, which are shown by means of broken views so that their construction and operation are readily understood. The catalogue also shows the B. & A. Combination Union Elbow Valve and Special Hot Water Fittings. It is accompanied by a letter stating that the firm have a stock of all sizes of their Elbow Valves and Union Elbows, and also 150,000 Key and W. W. Air Valves, so that they are prepared to ship promptly. The letter also says that they are prepared to make special prices and invite application for discount sheets applying to the catalogue.

James Ahern.

The plumbing trade throughout the United States will learn with regret of the death of James Ahern at his residence, 192 Farmington avenue, Hartford, Conn., on Sunday, September 15, in the sixty-second year of his age. Mr. Ahern was born in Ireland and came to the United States, with his widowed mother, in his boyhood. He graduated from the Brown School at Hartford, after which he learned the plumbing trade with Thomas Birch of that city, being for several years foreman of his establishment. In November, 1868, he went into business for himself, and at the time of his death was the head of a large establishment at 280 Asylum street. He was prominent in the business life of Hartford and was looked upon as a successful tradesman. Mr. Ahern took an active interest in all matters relating to the plumbing trade and served as a member of the Executive Committee of the National Association of Master Plumbers, as National State vice-president for Connecticut, as president of the Connecticut State Association of Master Plumbers, and was for many terms president of the Hartford Master Plumbers' Association. Mr. Ahern gave a great deal of time to the study of plumbing in its sanitary aspects and was the author of a number of papers on the subject read before plumbing associations. He was a man of the strictest integrity, and was held in high esteem by the members of the trade. He frequently counseled conservatism when radical movements were being advocated. Although he had himself been ailing for several months he was deeply impressed by the assassination of the President and was eager to get the latest news of the President's condition up to the time of his death. He was married in 1863 to Miss Mary Sheedy, who, with seven daughters, survives him.

The Master Plumbers' Association of Hartford, Conn., held a meeting at the store of George Mahl on September 16, and a committee on resolutions on the death of James Ahern was chosen, consisting of George Mahl, Edward Mahl, James F. Duffy, John S. Craig and Thomas Langdon. The resolutions adopted are as follows:

Whereas, The Supreme Ruler has removed from our midst one of our most faithful and respected members, and

Whereas, While we submit with respect to the Divine decree, we lose a true friend, and his family a devoted husband and father; therefore, be it

Resolved, That we, the members of the Hartford Master Plumbers' Association, extend to the afflicted family our sincere sympathy in their sad bereavement, and further

Resolved, That a copy of these resolutions be drawn up and sent to the family and placed on the records of our association.

Similar action was taken the same day at a special meeting of the Hartford Business Men's Association, held for the purpose of paying a tribute to the memory of one of its oldest and most faithful members.

The Farnan Brass Goods.

An excellent reputation is enjoyed among the plumbers throughout the United States by the Farnan Brass Works of Cleveland, Ohio, for the superiority of the material and workmanship, which is a feature of the great variety of brass work which they make for the plumbing trade. It is pointed out by the house that their goods will operate in the most satisfactory manner for years, regardless of how high the pressure may be that is carried by the water works system on which they are used. Special attention is called to the quality of the Farnan stop and waste cocks for high pressure work. They are said not only to contain good brass, but the metal is properly distributed to give strength and symmetry. They also have an enlarged waste feature, which adds to their convenience and also enables them to prove serviceable without leaking. In view of the fact that so much attention is paid to the newer productions the company point out that their stop and waste cocks and hydrant cocks have been in constant use by the plumbing trade in different parts of the country for the past 17 years, which fact they look upon as a guarantee of the quality. In addition to the goods mentioned the house manufacture a variety of hose and bib cocks which are shown in a catalogue of their goods which can be secured on application.

A New Pipe Cutting Plant.

Crane Company, New York, a branch of Crane Company, Chicago, manufacturers of valves, fittings, pipe, &c., have added to their already large quarters a plant for the cutting, threading and flanging of large and small pipe and for pipe bending. It is located at 497 to 505 Cherry street, connecting in the rear with the pipe storage warehouse at 742 and 744 Water street, and being opposite the main warehouse at 490 to 502 Cherry street. Being directly on the East River and very easily accessible to lighters, it is in convenient location for handling heavy work. The building is 125 x 100 feet, the main shop being 110 x 63 feet and devoted to the cutting, threading and flanging of large pipe. The rear shop is devoted to the handling of small pipe and to pipe bending. The pipe is brought from the yard to the machine on trolleys with air lifts and, when ready, is loaded into the trucks in the same way. There are 13 pipe machines in the main shop and, in addition to these, there are machines for screwing up flanges of all sizes and facing lathes for refacing flanges after they are screwed on.

Fine Plumbing Goods.

New England has ever had a reputation for being the home of a class of workmen who find no difficulty in devising and turning out first-class articles in whatever line they are engaged. No better evidence of this claim can be found than in the handsome and attractive plumbing goods produced by Peck Brothers & Co. of New Haven, Conn. The concern not only have well equipped plants for the manufacture of brass goods, but for a number of years their workmen have been trained in the manufacture of fine plumbers' brass work, which can be seen in the showrooms of the company in New Haven, New York and Boston. For a few years back the company have devoted special attention to the manufacture of those goods which are most suitable for equipping the bathrooms of fine residences. They have not, however, confined their efforts to the bathroom alone, but have been equally enterprising in the production of fine goods for the lavatory, pantry and kitchen. The elegance of the supply and waste fixtures for the bathtub and the lavatory and of the bathroom proper are only equaled by the beauty of their sitz bath and shower bath apparatus. Their towel supports, sponge holders and variety of soap cups leave nothing to be desired by the most fastidious in making a selection. The same pleasing taste is displayed in the design and finish of their pantry sink fixtures, and also the cocks required for the kitchen sink and its equipment.

In the attention given to the appearance of their product and its finish nothing is omitted in the quality of the material used or the method of manufacturing that would detract in the slightest from the quality, the goods being not only made for superior operation, but also for long service. In addition to these attractive goods the company make a varied line of fixtures and fittings for use where they are seldom seen, and on their quality and excellence depends the satisfactory use of the more handsome goods. The handsome bathrooms which they show at their various salesrooms are open for the inspection of the plumbing trade, the architects and their customers, and a visit is invited from those who are so situated that a visit can be readily made. The company issue handsomely prepared printed matter descriptive of their various goods, which will be found of great assistance to prospective customers.

THE Pittsburgh sales offices of the National Tube Company, A. M. Lally, sales manager, have been removed from the Conestoga Building to the Empire Building, Pittsburgh.

American Radiators.

The American Radiator Compauy, Chicago, have just issued the third edition of their radiator catalogue, corrected to July, 1901. This catalogue is of poeket size, neatly and substantially bonud iu stiff linen eovers, and comprises 195 pages. It is beautifully illustrated, a large number of the engravings being reproduetions of photographs. The titles throughout the book, headings of tables and catch lines are printed in red ink. A page is devoted to a presentation of views of the company's seven faetories, of which two are located at Detroit, two at Buffalo, one at Titusville, Pa., one at St. Louis and one at Springfield, Ohio.

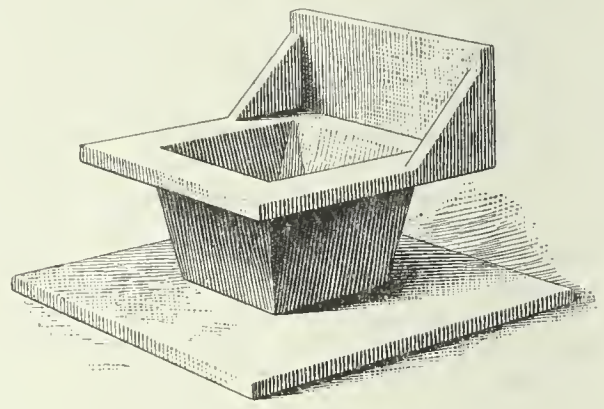
The introduetion to this catalogue ealls attention to the excellenee of design, high efficieney, superior quality aud unrivaled assortment of the eompany's radiators. They state that each style of radiator presented is eonstructed upou the elementary features of effieieney and compactness, economy aud eleanliness, graeefulness and artistic ornamentation, and with a view of its eomplete adaptability to the special requirements of the building to be heated, and the most convenient and available location thereiu for the radiators. The fact is emphasized that the sections of the American radiators eontain the full area of heating surface claimed. The internal area of the seetions and couueetion affords unobstrueted and large openings for the passage for steam and water, seeuring perfect eireulation, while the joints are absolutely tight and permanent. The company further state that immense stocks of radiators are regularly carried at their different faetories, also at their braneh es and warehouses located at so many of the prineipal business eenters, affording direet couneetion with every important transportation line iu America and with the highways of the world. This enables them to serve their eustomers at all times of the year with promptness and dispatch.

The leading plaee in the eatalogue is given to the Verona radiator, whieh is presented as the finest specimen of artistie molding iu the mauufacture of radiators. The Verona is unquestionably a work of art in iron. The other radiators shown iu the catalogue comprise the National Peerless, Buffalo Staudard, Zenith Narrow, St. Louis Standard, Perfeetion, Ideal, Favorite, Exeelsior, Roeoeo, Colonial, Italian aud Ætna. The styles shown are single eolumn, two, three and four eolumn wall radiators, curved radiators, box base radiators, direct-indireet radiators, coruer radiators, eireular radiators, stairway radiators and diuiug room radiators eontaining warming elosets. All these styles of radiators have an accompanying list of sizes, giving the heating surface of eaeh.

The bushing system, special tapping, pedestals, arrangement of legs, floor dampers aud eoucealed brackets are treated at eonsiderable length. The Perfection pin indirect steam or hot water radiators are shown in detail. Instructions are also given iu geometrical drawing, to aid the steam fitter in makiug aeeurate drawings to show an exact radius or augle within whieh a eurved or corner radiator is to be placed. Direetions for decorating will also be found useful to steam fitters. A eonvenient telegraph code is included in the eontents. This telegraph eode is quite extensive, covering praetically every matter likely to be ordered. A very full index eompletes the contents.

Hopper and Chute for Lead.

The vault under the sidewalk on the Twenty-fifth street side of the buildiug on Sixth avenue, New York, oecupied by the F. N. Du Bois Company is utilized for the storage of pigs of lead. The vault is covered with a concrete pavement. Over the center of the vault special girders for strengthening the roof have been plaeed so as to support a hopper and chute, to facilitate the receiving of a quantity of lead iu pigs of about 80 pouuds. Above the sidewalk the removable cast iron hopper shown in our illnstration is used. The casting averages about 1½ inches in thickness, is about 15 inches square, inside measure, at the top, and tapers to au opening about 9 inches across at the bottom. This openiug is made oetagonal in shape by the reinforeement of the corners of the hopper. The hopper stands something over 1 foot in hight, and on one side has a shield extending about 1 foot up above the top of the hopper. The dimensions and shape of the hopper are sueh that even should a pig of lead be awkwardly thrown it cannot readily eateh and choke the hopper. On the under side of the roof is a heavy flat easting with an opening about 1 foot square in the ceuter, so supported that it can be turned in different directions so that the heavy wrought iron ehute attaehed to it can be made to throw the pigs of lead in any part of the vault. The force of the fall of the pig lead from the delivery wagon is broken in the hopper, and as it passes throngh the ehute there is just sufficient force to earry the pig free of the end of the ehute. The



Hopper and Chute for Lead.

wrought iron ehute has a eurved baek conforming to the radii of a 30-ineh eircle and the chute is not over 3 feet in length, including the eurve.

Elliott Perry Gleason.

Elliott Perry Gleason, a well-known inventor and manufaeturer, died at his home in Brooklyn on Thursday in his eighty-first year. Mr. Gleason was born in Westmoreland, N. H. At the age of 15 he moved to Boston and afterward to Providence, where in 1851 he went into business under the firm name of Mooney & Gleason in the manufaeture of gas burners and similar supplies, whieh at that time was a new industry. Mr. Gleason perfeeted the Argand gas burner, whieh netted him a fortune. He also invented the two-hole or fish tail gas burner tip and numerous other valuable improvements.

In 1861 he established himself in New York City, where in 1871 he incorporated the E. P. Gleason Mfg. Company. He also owned the Gleason Knitting & Mfg. Company of Seneca Falls, and was the prineipal owner of the Gleason & Bailey Compauy, also of Seneea Falls. He was also president of the Gleason-Peters Air Pump Company, the Lawler Water Feed & Damper Regulator Company, and the Steam Boiler Equipment Company of New Yerk. In 1883 he began, in Brooklyn, the manufacture of glass ware for illuminating purposes.

Mr. Gleason was never married. He is survived by two sisters and a brother. His body will be buried in the family plot at Greenwood Cemetery on Sunday.

Sanitary Appliances for Large Buildings.

The Standard Sanitary Mfg. Company, Pittsburgh, Pa., are sending to the trade a pamphlet entitled "Modern Sanitary Appliances for Schools, Asylums, Publie Buildings, Institutions, Factories, &c.," which illustrates and describes in a eomprehensive manner their line of poreelain enameled syphon eduetion, wash out and syphon jet range closets, porcelain enameled publie urinals and marble and slate urinal stalls for work such as described in the above mentioned title. Particular attention should be given to the goods shown in this pamphlet, whieh are of the most improved aud sanitary patterns, the construction being based upon absolutely seientifie lines. Considerable time and thought, as well as monetary outlay, must have been expended in devising aud introducing various new features in goods of this

eharaeter, with the view of seeuring the greatest possible sanitary perfection and efficieney of operation. The fixtures shown in this pamphlet possess many valnable and original featnres, and their installation in publie work will make for the betterment of plumbing and sanitation generally.

Since the consolidation of the various plants of which this eompany are eomposed was effeeted many very valnable sanitary deviees have been put npon the market and a distinct advance in the quality of their wares is noticeable.

Water Heating.

BY BEN SCALDED.

After the primeval savage got too lazy to walk to the stream every time he wanted a drink he devised a skin reeeptaele to carry some along with him wherever he went. He also learned that on some occasions hot water was desirable, and his early produetions in earthen ware show his method of solving the problem of heating water. That was a long time ago; bnt the problem of heating water is still presented to his descendants. A little hot water snfficed for the savage, but our up to date civilization leads us to a want of oceans of hot water, so to speak, and in many instances it is asked for without any more intelligent idea of its cost than the savage had. Following the gymnasium came the swimming pool, and with the Turkish bath came the modern publie bath, all requiring, if not oeeans of hot water, at least an abundance of it and in short meter. Naturally the plumber and steam fitter who have furnished the apparatus for supplying hot water for domestie purposes and heating are looked to to meet this demand, and they are asked in simple confidence to furnish an apparatus to supply such an extraordinary qnantity of hot water as 20,000 gallons in an hour.

THE PLUMBER.

Always enjoying something that is worthy of their mettle, and not wishing to display any surprise at this demand, though they scent the fact that it is rather a big contract, the plumbers smile genially on the eustomer to impress him with the idea that it is only a matter of eourse. In eonsidering this problem the plumber naturally reekons on the amount of hot water furnished in a big hotel by plaeing a water baek which occupied three sides of the fire ehamber in three of the fires of the long hotel range, and eonclndes, after these rnminations in the field of thought and hot water heating, that, even if an ordinary water baek will heat a 30-gallon boiler in three-quarters of an hour it would not amount to a seale on the tail of this hot water fish, and that some special water heater must be used.

THE STEAM FITTER.

The steam fitter knows something of boilers furnishing hot water to the radiators of a house heating system and can make the last radiator on the line show hot water in 11 minntes after the fire is lit, even when a system eontains several hundred gallons of water. Bnt to furnish as mueh as 20,000 gallons of hot water in an hour rather stumps him and he is willing to reeeive adviee. This all goes to show that the cultnred eivilian, like the savage, needs to caleulate and tinker when it comes to heating water, partieularly sueh a qnantity as 20,000 gallons, even if more time is allowed to do it in than one hour. It is the custom to "euss" the "scientific feller," with his long calculations to find out how to do a little job, but when problems like this arise with which there is no experience to gnide them and they are willing to nse some other rule than the rule of thnmb, then they are glad to pay a fee to an engineer.

SOME THUMB RULES.

It is interesting to know the opinions held by different men on water heating. Only a short time sinee eatalogues were issned by the manufactnrers stating that their heaters would raise a given nnmber of gallons of water from 50 degrees to the boiling point per honr, when really the heaters wonld not raise one-quarter this amonnt if they were actually put to the test. Even now it is the custom to calculate that when small hot water heaters are used in eonnection with storage tanks they will heat 1.3 gallons of water for every square foot of radiation they will earry. This eonclusion has seemingly been proven eorrect from the fact that when boilers or heaters are eonneeted with storage tanks having a capaeity based on this theory, no complaint is heard. And even a better showing is made. This is dne to the faet that when the storage tank is once filled with hot water the heater will keep it snpplied with hot water in sufficient quantity to meet the reqnirements of the oceupants of the bnilding, even if it does not raise the qnantity of water which it is rated to heat from 50 to 160 or 180 degrees per honr.

Helped out in the same way, the rules used by some experienced men that a boiler will heat from one-half to two-thirds as many gallons of water per honr as it will carry square feet of radiation has seemingly proved eorrect.

A MORE SCIENTIFIC METHOD.

Where it is necessary for a contractor to earry ont exaetly what he is ealled upon to do it is safer to use a different method of figuring than either of the foregoing and to be morc scientifie in the method. If a eustomer requires 20,000 gallons of water heated, the first thing that it will be necessary to learn is the temperature at whieh the water is to be furnished. Assuming that it will eome from the street supply, ordinarily this will be about 50 degrees. If it is to be raised to a temperature of 180 degrees, eaeh ponnd of water must be raised 130 degrees, and as a gallon of water weighs 8.3 pounds, 20,000 gallons would weigh 166,000 ponnds. It is a basis of calculation that a heat unit is the amount of heat required to raise 1 pound of water 1 degree, and if 166,000 pounds are to be raised 130 degrees, this would reqnire 21,580,000 units of heat.

THE AMOUNT OF COAL.

Having found out the amount of heat required the next thing to determine is the apparatus that will be needed for the work. As the heat ordinarily is derived from coal, it must be determined how many pounds of coal it will be necessary to burn to generate the heat reqnired.

A high grade of eoal will give off as many as 14,000 nnits of heat if eonsumed under conditions of perfect eombustion, bnt in view of the wastc due to the loss of heat in the ehimney, unconsumed eoal in the ashes, unskilled handling by the fireman and the loss of heat due to imperfect construetion of the apparatus, it is not well to assume that more than 7000 units of heat will be utilized in heating water by burning a pound of eoal. In order, therefore, to determine the nnmber of pounds of coal required for heating 20,000 gallons of water, it is neeessary to divide the heat units neeessary by 7000, when it will be found that 3083 pounds of eoal will be necessary if the work is to be done in one hour.

SIZE OF GRATE REQUIRED.

Assuming that this would be burned in a boiler of good eonstruction, fired by a skillful fireman, it is probable that as mneh as 10 pounds of eoal an hour would be bnrned by 1 sqnare foot of grate snrfaee, and by dividing 3083 pounds of eoal by 10 it will be found that the grate surfaee required would be 308 square feet. If boilers of the east iron vertical sectional type were used it would require 20 boilers, each having a grate 3½ x 4½ feet in size, and such boilers are ordinarily rated to carry between 5000 and 6000 square feet of direet radiating surfaee.

MORE TIME, LESS PLANT AND COST.

When the prospective purchaser of sueh a hot water heating apparatus is confronted with the prlee of sneh a plant he usually is found willing to allow more time. As a matter of fact, it has been fonnd in gymnasiums, Turkish bath establishments and other plaees where large quantities of water are used, that ten hours can ordinarily be allowed for heating the water. If 3083 pounds of coal are needed to heat the water in one hour, it will readily be seen that if ten hours are allowed to the task it will be only neeessary to burn 308 pounds of eoal per hour. Owing to the fact that the firing nsually is not of the most intelligent character and the smaller cast iron

boilers ordinarily are not capable of burning as much as 10 pounds of coal per square foot of grate surface It would be better to calculate to burn 8 pounds of coal per square feet of grate surface. By dividing the 308 pounds of coal by 8 it is found that 38½ square feet of grate surface will be required for burning the coal uecesary to do the heating, aud that three boilers haviug 13 square feet of grate surfaee and rated to carry 5000 feet of radiation would be necessary for the work.

ANOTHER METHOD.

Another method of calculatiug the ability of cast iron water heaters for heating water iu quantities is as follows: It is assnmed that 1 square foot of direct hot water radiation at a temperature of 180 degrees gives off aiout 175 heat uuits per hour. A gallon of water weighs 8.3 pounds and to raise it from 50 to 180 degrees would require 1079 units of heat, so that the heat generated in a boiler capable of earryiug a square foot of radiation at a temperature of 180 degrees would only be capable of heatiug eontinuously 1-6 gallon of water from 50 degrees to 180 degrees. In other words, instead of the boiler being capable of heating one-half to two-thirds as many gallons of water as it would carry square feet of radiation, it would only be capable of eontinuously raisiug one-sixth as many gallons of water from 50 to 180 degrees as it would carry square feet of direct radiation.

Apparently, in calculating ou the apparatus required for heatiug water in large quantities, there is a great difference of opiuion amoug those who provide such plants, aud they ofteu take large chauces in the apparatus whieh they furnish. No doubt, in many iustances, the lack of knowledge of what is required is made up by forced firing to secure a better efficiency in the apparatus, or in using more time thau was specified, aud in other ways, and what is furnished is accepted as satisfactory, even if it does not come up to the demaud originally specified. Be that as it may, what has been said, if not generally aecepted, may be of use to those who may be called upon to heat large quantities of water, if they cannot submit their problem to a qualified eugiueer.

New York City Notes.

Trade still continues to be good in all lines, with nearly every master plumber busy and good journeymen very hard to get. Material in some lines still coutinues scarce, but there is not the delay in gettiug it that there was a short time ago.

* * *

After a great deal of speculatiou as to who would be the lueky plumber and much figuring by those who do that kind of work, the plumbing in the Hall of Records has been let by the general contractor direetly to a wholly outside party—namely, Lehrer & Co. of 930 Secoud avenue. Lehrer & Co. are to be eongratulated upou gettiug this job, the eost of which will approximate about $100,000. It is needless to say that only the best materials will be used in this building.

* * *

Among the busy plumbers are De Graw & Cully of Broadway and Eighty-fourth street, who, in addition to their regular trade, are plumbing a large store and office building on Fifty-ninth street, between Park and Madison aveuues. Chas. Heusle, while winding up most of his summer work, has just started the plumbing in an eight-story apartuent ou Fiftieth street, between Broadway and Eighth avenue. J. N. Knight & Son are very busy with jobbing and overhauliug and are also at work on a large 12-story apartmeut hotel on Forty-fourth street, between Fifth and Sixth avenues. Geo. W. Martin of Brook aveuue has just eompleted building aud plumbing two large apartmeut houses at 152d street and St. Nicholas avenue, aud has a large apartment well under way at 240½ West Forty-ninth street.

* * *

Owing to the great demand for journeymen at the present time a movement is under way among them for an increase of wages and a half holiday ou Saturday, the same to go into effeet about October 15. What the outcome of this will be, owing to the existence of the two rival organizations, and, if the increase is granted, how it will affect exlsting contraets, remains to be seeu.

Heating and Plumbing Notes.

A MEETING of the Board of Governors of the Amerieau Society of Heating and Veutilating Engineers is being held at the time we go to press at the offiee of the secretary, W. M. Mackay, in New York, for the purpose of fixiug the date for holding the annual meeting, the appoiutment of a nominating committee and to take action on a dozen or more applications for membership.

J. B. BEEGAN, New Haven, Conn., has the contract for installing three Howard furnaces iu residences In that city, aud is also making water connection in four houses.

A FIRE broke out last week iu the foundry aud brass shops of the N. O. Nelson Mfg. Company at Edwardsville, Ill. The damage was principally to the roof, although some loss occurred in the foundry department. The automatic sprinklers with whieh the building was equipped prevented the fire from spreading.

THE followiug story is told by "Vulcan" in the London *Ironmonger:* A certain English master plumber, haviug a suspieion that his men did not begin work at the proper time, thought he would go down early one morning to the shop and see for himself what was being done. Enteriug the yard, he caught sight of a plumber standing smokiug and his bag not eveu opened. Simply asking his uame, whieh he found to be Malcolm Campbell, he called him to the office and hauded him four days' pay, ordering him to leave at once. After seeing the man clear of the premises, he went to the foreman and explained that he had made an example of Malcolm Campbell by payiug him off for not starting work at the proper hour. "Good heavens, sir!" ejaculated the foreman, "that chap was only looking for a job."

W. G. HEATH & Co., Providence, R. I., have recently secured eontraets for the Installatiou of Boynton Steam Boilers made by the Boynton Furnace Company, in the residences of H. B. Wood, Clarence W. Hawkins, in Lakewood, and John O. Adams, in East Providence.

THE Board of Commissioners of Morgan County, Ind., invite sealed proposals at the Auditor's office in Martinsburg until October 7, 1901, for furnishing all materials and placing in position a low pressure gravity steam heating and ventilating apparatus for the Morgan County Court House. Plans and specifications are on file at the Auditor's offiee in Martinsburg.

THE BUCKINGHAM-ROUTH COMPANY, New Haven, Conn., are removing the old boilers and installing new Ideal Boilers made by the Amerieau Radiator Company in the residenee of A. McC. Matthewson, the parsonage of the Davenport Church, and Mrs. Wilhelmina H. Von Glahu. They are also heating and plumbing a new residence for Mrs. H. L. Wilbur.

THE master plumbers of North Hudson, N. J., have organized a protective association, with the following officers: Jacob Lang, president; H. L. Sebeske, seeretary; R. Reimenscheider, treasurer, and J. J. Cleary, sergeant-at-arms.

AT a meetiug of the Wisconsin State Board of Control, held at Hotel Pfister, Milwaukee, W. H. Halsey was engaged to supervise the plumbing work at the Home for the Feeble Minded at Chippewa Falls. The work is to be done without eontract, the board purchasing the material and employing the plumbers. Mr. Halsey is to be paid $10 a day for his services.

J. W. HUNT & Co., Provldence, R. I., have contracts for installiug a Glenwood Furnace in a residenee for Sullivan A. Brown aud a Glenwood Steam Boiler in the residence of William Osgood. They are doing the plumbing in a house for Gustave O. Miller and for Annie W. Chase.

THE new Tube plant which is being erected at Wheeling, W. Va., by the Wheeling Steel & Iron Company is progressing rapidly. It is stated that the company have invested $1,000,000 in the enterprise, and that the plant

will be one of the largest and most complete of its kind in the United States.

THE Plumbers' Union of Toronto, Canada, again won the cup for the most attractive turnout in the Labor Day parade in that city.

WM. H. WALKER, Clinton, Mass., has moved his plumbing business to a fine store in the Associate's Block on High street.

THE Commissioner of Indian Affairs at Washington, D. C., will receive bids until October 7 for steam heating and electric lighting systems for the school building at Chilocco, Okla.

WILLIAM PURDY, 222 Ninth avenue, New York, is making a specialty of the Purdy Pipe Clamp for repairing pipes of any character in emergencies. It consists of a wide sheet metal strap made in three sizes to fit all sizes of pipe, from ½ inch to 2½ inches in diameter. The strap is bent U shaped, and has holes cut in each end in which there is a nut for a set screw which is used to bring down a long iron bearing piece against a rubber gasket to stop a leak in a pipe. Some advantage is said to be gained by the use of red lead under the rubber gasket. It is pointed out that for making a quick repair to meet an emergency leak in a gas, water or steam pipe, this pipe clamp is well adapted, as it only requires a wrench of some sort to tighten the set screw to make it effective.

D. M NESBITT of the firm of Ashwell & Nesbitt, Limited, heating and ventilating engineers and contractors, of London, England, has informed some of his friends in the United States that he will sail for New York on the steamer "Teutonic," from Liverpool, on October 9.

JOHN C. FISHER, a well-known plumber of Wilkinsburg, Pa., died of dropsy on Thursday morning, September 19, at his residence, 305 West street. He is survived by a wife and one child.

THOMAS W. CONNOLLY, 88 Charlotte street, Rochester, N. Y., has been appointed assistant plumbing inspector by Commissioner Casey of the Department of Public Safety. Mr. Connolly had a rating of 97.2 on the Civil Service eligible list.

JEREMIAH T. CAHILL died at his home, 33 Vernon street, Worcester, Mass., on September 20. He had been in the plumbing business in that city for 25 years, and was the head of the plumbing firm of J. T. Cahill & Son at 18 Pleasant street. He is survived by a wife, three sons and two daughters.

THE Maryland State Plumbing Board is taking steps to prevent plumbers working in the city of Baltimore without having a certificate of competency and registering.

THE plumbers of Des Moines, Iowa, are protesting against a proposed amendment in the ordinance governing the making of connections to water mains. The proposition is to allow several buildings to be supplied from one tap in the main. That has been found an objectionable practice and it is prohibited by the regulations in many cities.

A DAINTILY printed pamphlet of eight pages and of a size convenient to carry in the pocket is being sent out by the Gurney Foundry Company, Limited, of Toronto, Canada. In it attention is called to the Gurney Oxford hot water heaters and boilers, which are recommended as solving the problem of how to keep warm.

THE ROBERTS MFG. COMPANY, 1213-1215 Market street, Philadelphia, Pa., manufacturers of Roberts' Natural Germ Proof Filters, are circularizing the trade and calling attention to their Filters, which they claim are unequaled for promoting health and comfort. The Filters are made of what is claimed to be the only perfect filtering medium known—natural stone. They are simple in construction, will not get out of order, and it is said will last a lifetime. They can be easily, quickly and perfectly cleaned, and will fit any faucet, large or small, threaded or plain.

PHELPS BROTHERS, 284 and 286 Pearl street, New York, have been appointed wholesale selling agents by the Norristown Covering Company, Limited, of Norristown, Pa., manufacturers of Steam Pipe and Boiler Coverings, Asbestos Cements, Mineral Wool, Hair Felt, Cold Water Pipe Covering, Asbestos Paper, Asbestos Millboard and Hot Air Pipe Covering. Phelps Brothers do no construction work, and sell to the trade only. They carry a full line and large stocks, and can make prompt shipments of any orders placed with them for execution.

THE PAGE COMPANY, Norwich, Conn., are sending out a little pamphlet devoted to their new Steam and Hot Water Heaters. Half-tone engravings are presented of their New Era Boiler, which is made in five sizes, with grates 12, 15, 18, 21 and 24 inches in diameter rated to carry 150, 200, 300, 450 and 600 square feet of direct steam radiation. The construction provides for a central circulation of the water and for an indirect passage of the products of combustion to insure economy and efficiency. The pamphlet also gives notice that two sizes of Page's New Century Boiler will be ready in October. It shows Page's Radiator Holders, one designed to be fastened with screws to the baseboard to support one leg of the radiator, while the other supports the outer leg. It is pointed out that where they are used it is only necessary to push in at the top to release the pressure on the carpet and the carpet can be removed for cleaning and relaid without the assistance of a steam fitter.

ROBERT B. SCOLLAY, brother of the late John A. Scollay and uncle of Ulysses G. Scollay, with whom he had been in the plumbers' supply business on Myrtle aveuue, Brooklyn, N. Y., for the past 20 years, died at his home, 236 Halsey street, Tuesday, of Bright's disease. He was born in Dundee, Scotland, in 1843, and came to this country when a lad. He was first in the produce commission business, but later went with his brother. He was unmarried.

WILLIAM WILD'S SONS, Northport, L. I., are installing a Hitchins Hot Water Apparatus in the greenhouse of Fred. Kiefer, and an Ontario Hot Water Heater made by the Pierce, Butler & Pierce Mfg. Company in the residence of W. R. Kissams in that town.

New Firms and Changes.

G. W. WASHBURN, who conducted a plumbing and heating business in Danbury, Coun., for eight years, and who was lately with the Thatcher Furnace Company, at 240 Water street, New York, has opened a plumbing and heating shop at 29 Orawaupum street, White Plains, N. Y. He proposes to do a high class of sanitary plumbing and heating, and will also conduct a tinsmithing business and a retail business in Stoves and Ranges. Mr. Washburn will be pleased to receive catalogues from manufacturers of goods in the lines which he represents.

DANIEL NEWMAN, who has been connected with the plumbing firm of Newman & Cronin, New London, Coun., for the past 31 years, has retired, and is succeeded by Daniel T. Newman. The firm name will not be changed, and the business will be continued as formerly.

THE MANSFIELD PLUMBING COMPANY of 230 Washington place, Passaic, N. J., have been incorporated, with a capital of $20,000, by Robert J. Culleu, S. William Burnett, Robert W. Burrell and Thomas Nolan.

THE JENKINS GAS BURNER COMPANY of Washingtou, D. C., have been incorporated with a capital of $100,000 to manufacture all kinds of Burners.

THE HILTON BRASS WORKS have been incorporated in Brooklyn, N. Y., with a capital of $20,000 to manufacture Gas Fixtures, Chandeliers, &c.

A great deal has been printed this summer about the experiments in New Jersey and elsewhere for getting rid of mosquitoes by means of petroleum. In this connection a communication to the New York *Sun* from a correspondent at Beaumont, Texas, is of some interest. The correspondent in question asserts that at the center of the now famous oil district, known as Spindle Top Hights, mosquitoes are as thick as in any place in Staten Island or New Jersey, although the air is laden with the fumes of oil, and the ground is soaked with it for many acres around.

PAINTING TIN ROOFS.

A few months ago the Congdon & Carpenter Company, Providence, R. I., sent out a large number of circular letters to manufacturers of tin plates, architects and roofers in which the three following questions were asked:

First.—How soon after a roof is covered with best Roofing Tin do you think it should be painted?

Second.—Would you care to guarantee a roof if it were not painted?

Third.—Would you care to guarantee a roof if it were not painted, and if part of it were under water?

Replies were received giving many valuable expressions of opinion. These have been carefully tabulated for easy reference and will doubtless prove of interest to the trade.

THE FIRST QUESTION.

The first question, *How soon after a roof is covered with best roofing tin do you think it should be painted?* brought out quite a difference of opinion.

Manufacturers practically agreed in their answers, which advised that roofs be painted immediately or as soon as possible after being laid.

The architects showed a considerable difference in opinion. Below are given some of their replies:

"After first rain."
"After tin loses greasy surface."
"Before it shows any sign of rust."
"From four to six weeks."
"Soon as possible after laying."
"Four weeks."
"When the oil is off and just before rusting begins."
"After not more than one or two rains. Certainly before it begins to rust."
"Immediately after put on."
"Within two weeks."
"It depends upon where the tin is located; 30 to 90 days."
"The sooner the better."
"At once."
"Immediately after putting on."
"After first good rain."
"Just before the tin wears off."

The tinsmiths and roofers also show a wide difference of opinion. A few replies are as follows:

"Paint immediately."
"Three weeks."
"After six months."
"Soon as possible."
"At once."
"After two or three rains."
"Immediately."
"Three or four days."
"Soon as possible."
"One night; sooner the better."
"After second rain."
"Two weeks."
"After first rain."
"Painted at once."
"Sooner the better."
"Two weeks."
"Nine days."
"Quicker the better."
"When it begins to rust."
"Soon as it shows sign of rust."
"Four weeks."
"After first rain."
"Immediately."
"One year."
"Immediately."
"After one wetting."
"Four or five weeks."

THE SECOND QUESTION.

Would you care to guarantee a roof if it were not painted?

To this the manufacturers practically agree in the answer "No," stating that the best roofing tin in any climate needs paint as an additional protection. The architects make the same reply.

Most of the tinners state that they will not guarantee an unpainted tin roof, although a few are willing to do so for the lengths of time below stated, which, it will be noticed, vary greatly:

"Six months." "Four or five weeks." "One year." "Five years." "Five to seven years." "Not longer than one year." "Three seasons." "Three years." "Five years." "One year if not painted." "Will guarantee a roof five years if not painted."

THE THIRD QUESTION.

The manufacturers and architects agree absolutely in making the reply of "Certainly not" to the third question, *Would you care to guarantee a roof if it were not painted, and if part of it were under water?*

The tinners and roofers in nearly all cases say "No." Some of the other answers are of interest, as they show a vast variance in opinion:

"Not within 25 miles of Providence." "No man with ordinary intelligence would ask such a question, because it could not be given." "Five years." "Two seasons." "Two years." "Three years." "One month." "Roof under water not painted will last about four years."

DEDUCTIONS

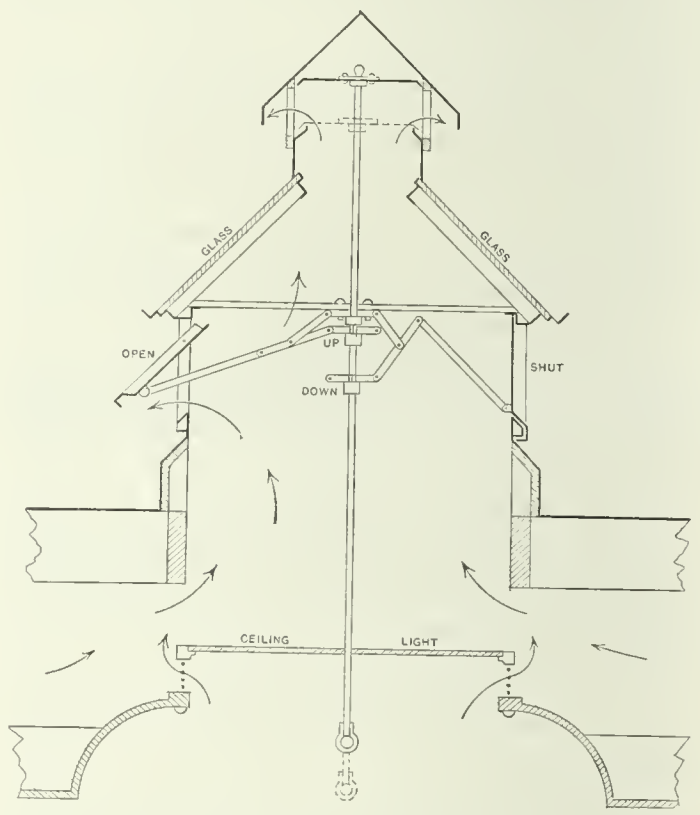
The Congdon & Carpenter Company say that after getting the answers from the best authority in the country, and from people in their own State, they have come to the following conclusions:

First.—Any roof covered with roofing tin should be painted immediately after the roof is covered.

Second and Third.—No manufacturer will guarantee roofing tin if it is not painted at once after the roof is covered, as the best roofing tin in any climate needs paint as an additional protection.

The Valve Light Ventilator.

In the accompanying illustration is shown an elevation of the valve light ventilator which is being manufactured, under patents granted to H. W. Waldmire, by



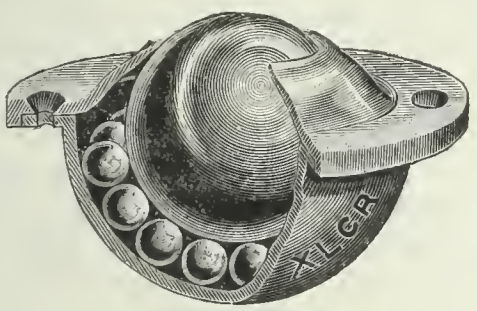
The Valve Light Ventilator.

the Meade Roofing & Cornice Company, 3717-3721 Filbert street, Philadelphia. The valve light ventilator is designed to afford both light and ventilation. It is made square in shape, with a valve on each of the four sides and a valve in the top vent, and is constructed so as to be operated by a center rod which in rising opens the valves and dropping down closes them. The center rod may be operated either by means of a pole and hook or by a continuous cord or chain running over a pulley in the top of the vent, the chain being connected with eyes in the rod at both the top and bottom. Its construction provides that the valves have a greater area for the passage of air than the base of the ventilator proper. The ventilators are made in various sizes, from 30 inches to 60 inches square, inside measurement, with an allowance of 3 inches all around for the curb. No solder is required in the construction to make the ventilator water proof and to hold the parts together, the connections being effected by means of lugs and joints which also make it fire proof. Another feature of the ventilator is that the valves can be regulated to a large or small opening, as may be desirable. When closed they are said to be absolutely storm proof. The illustration also shows

that this ventilator and light valve may be used to draw the air from the space between the ceiling and the roof, as well as from the room, while at the same time the ceiling light enables it to give light to the building. The ventilators are made complete with the movement ready for attaching to a building, leaving the glass only to be put in place.

The X L C R Ball Bearing Caster.

In the accompanying illustration we show the X L C R ball bearing caster, which has recently been patented and is now being manufactured by the Excelsior Tool & Machine Works, St. Louis, Mo. The house make a specialty of designing and building tools and machines for steel range manufacturers and have learned of the labor expended in the handling of the large sheets from which the ranges are made. It is customary to have tables or racks adjacent to the machines on which the sheets rest while being punched, and the friction when the sheets must be drawn along after punching one hole to punch another has made the work very laborious. In order to overcome this friction the X L C R ball bearing casters have been produced. A number of these casters can be readily let into the tables or racks, fitted on trestles, or fastened to parts of the machine where the sheets being worked naturally find a bearing. It is pointed out that where they are used the sheets can be shifted or moved



The X L C R Ball Bearing Caster.

easily in any direction, free from the friction and resistance that have made the work so hard under the old methods, or where ordinary casters have been used for the purpose. It is claimed that by the use of the X L C R casters the feeding of large sheets to a punching press with a throat 20 inches deep is a simple matter and readily accomplished by a single workman. The casters are made in a substantial manner, well adapting them for this purpose. From their strength and quality they are adapted for many other purposes where a strong caster, permitting a true and frictionless movement in any direction, is desired. The company state that samples of the casters have been used in some range shops with such satisfaction that already orders are beginning to come in, and they look forward to a good trade for their new production.

Herringbone Lath.

The International Metal Lath Company, Niles, Ohio, are offering metal lath, as herewith illustrated. The plain lath shown in Fig. 1 is designed for use on side

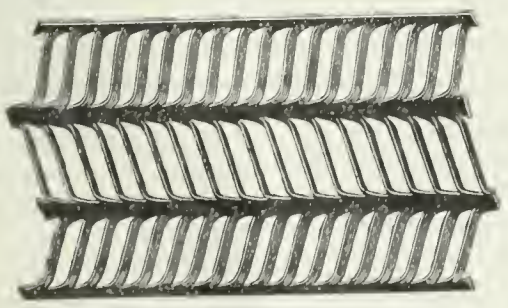


Fig. 1.—Plain Herringbone Lath.

walls, and the flat lath, Fig. 2, for ceilings. The following points of excellence are mentioned by the manufacturers: That the lath is extremely rigid; that it does not buckle, so that there is no time lost in stretching sheets before fastening; that the edges are uniform and even, necessitating no overlapping and consequent waste; that its application is comparatively cheap, because of its uniform character, and that the lath is self

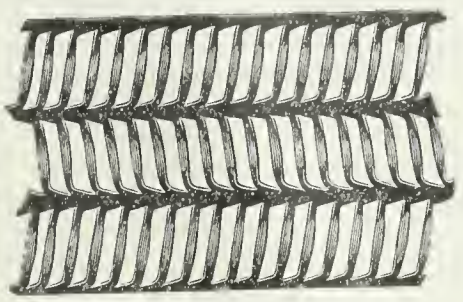


Fig. 2.—Flat Herringbone Lath.

furring, the ribs making it so. The lath is made in sheets 14 x 96 inches in size.

FLASHINGS.

The McClary Mfg. Company of London, Ontario, who are among the largest producers of Enameled Ware in Canada, have recently installed what they claim to be the largest drawing press in America. The press, which was manufactured at Goppinger, Germany, weighs 90,000 pounds, and is mounted on a concrete foundation 21 feet square and 8 feet deep, the whole foundation being 12 feet below the surface. The machine is used for drawing into shape the flat metal blanks before receiving the enameling coat. The press will form everything that is manufactured in the Enameled Ware trade, from a small cup 2½ inches in diameter to a Tub 2 feet in diameter, and will draw Sheet Steel ranging from 25 gauge to 10 gauge, the latter being required for Sinks and other heavy articles.

The Sharon Steel Company of Sharon, Pa., will build a large galvanizing plant in connection with the ten Sheet mills they now have in the course of construction. The galvanizing plant, it is said, will cost in the neighborhood of $200,000.

The American Sheet Steel Company's plant at Struthers, Ohio, resumed operations on Monday in all departments, the former employees being reinstated. It is reported that the company will build an addition to the Struthers plant which will increase its capacity one-third.

The American Tin Plate Company are preparing to start their plant at Chester, W. Va., as soon as possible. The Chester Sheet plant was purchased from the American Sheet Steel Company and converted into a Tin Plate mill.

The newly organized Conneaut Can Company, Conneaut, Ohio, will begin to erect the necessary buildings for their factory immediately. At a meeting of the directors of the new concern, held last week, it was announced that the plant will be running by January 1. The company have a capital of $50,000.

A notice has been posted at the Great Western plant of the American Tin Plate Company at Joliet, Ill., advising the men to secure employment elsewhere, as the plant will not be operated this winter. It is rumored that the Joliet works will probably be dismantled and the machinery removed to some other location.

The plant of the American Tin Can Company, at Toledo, Ohio, was destroyed by fire on the afternoon of September 21. The loss is reported to be about $300,000, on which there was an insurance of $188,000. The plant was a large four story brick structure and gave employment to 500 men. The cause of the fire has not been discovered.

The Fred. J. Swaine Company, St. Louis, Mo., report the market for special machinery in a most satisfactory state. Their business has shown a steady growth each month during the past year. This has necessitated the enlargement of their works, and during that time they have expended over $4000 in new apparatus, with prospects of a much larger expansion in the future should their business continue as it has in the past.

Their work is now much handicapped through the non-delivery of many new tools ordered. Ordinarily this firm have been able to carry a large stock of their special machines, but at the present time they have sold more than they can make. They have been busy of late rebuilding and overhauling the machinery of the Hemp & Co.'s Sheet Metal working plant, recently destroyed by fire. They have on hand now a large contract with Kingau & Co., Indianapolis, Ind., for special machinery to be used in their Tin Can factory.

William Vogel & Brothers, 37-47 South Ninth street, Brooklyn, N. Y., advise us that while they have disposed of their Tin Can and Package manufacturing business to the American Can Company, they are still manufacturing at their plant everything else in the line of Sheet Metal and Tinware, making a specialty of stamped and drawn work. They are also turning out a regular line of Oilers, Sheet Metal Screws and Tinners' Trimmings.

The Cleveland Punch & Shear Works Company, Cleveland, Ohio, say this has been the best September in the history of their business. They have caught up considerably on the delays caused by their machinists' strike, and are now running only two evenings a week. The Cleveland Punch & Shear Works Company are getting out an elaborate catalogue describing their complete line of Tools, and it will be mailed early next month.

The Sharon Tin Plate Company have decided to build 75 more houses at South Sharon, Pa., for the accommodation of their employees. It is said the Sharon Steel Company and Sharon Tin Plate Company now own about 500 houses in which their employees live.

The Chartiers Works of the American Sheet Steel Company, at Carnegie, near Pittsburgh, have practically been dismantled. The mills have been taken to Vandergrift, and John Henry, the former manager of the plant, will go to the Apollo Mills of the American Sheet Steel Company.

Practically the entire plant of the W. Dewees Wood Works of the American Sheet Steel Company, at McKeesport, Pa., is in full operation. This plant was idle nearly three months, and during that time the equipment was overhauled and a good deal of new machinery was added. The plant is in better physical shape now than for a long time.

James E. Kelley & Son, New Haven, Conn., have taken contracts for roofing the buildings of the New Haven Chair Company, the Whitlock Coil Pipe Company, Elmwood; James Boyle's block in New Britain and a building in Ansonia for C. Y. Woodruff.

The Niagara Machine & Tool Works of Buffalo, N. Y., have been incorporated with a capital stock of $200,000 by Julius W. Gerger, Adam E. Heinz, Otto J. Lautz, George A. Lautz, and George R. Munschauer, all of Buffalo.

TERMS OF STRIKE SETTLEMENT.

Theodore J. Shaffer, the president of the Amalgamated Association, issued this week his promised statement to the members of the association covering the history of the steel strike from its inception up to the final settlement. After giving an account of the conferences leading up to the settlement, the result of the last conference, held in New York September 14, is detailed. At this conference the following terms of settlement were agreed to:

AMERICAN TIN PLATE.

1. Scale shall be the price agreed upon at Cleveland and found in scale book.

2. This contract is between the Amalgamated Association and the American Tin Plate Company, the latter being a distinct and separate company in themselves.

3. The company reserve their right to discharge any employee who shall, by interference, abuse or constraint, prevent another from peaceably following his vocation, without reference to connection with labor organizations.

4. Nonunion mills shall be represented as such—no attempts made to organize, no charters granted; old charters retained by men if they desire.

5. Individual agreements shall be made for mills of improved character until they are developed, when scales shall be made to govern them.

6. Scale signed for mills named below: Elwood, Ind.; Middletown, Ind.; Anderson, Ind.; Atanta, Ind.; Lisbon, Canonsburg, Ellwood City, Falcon, Joliet, Connellsville, Johnstown, La Belle, Laughlin, Gas City, New Kensington (two mills), New Castle (two mills), Muskegon, Canal Dover.

7. Agreed that the company shall not hold prejudice against the employes by reason of their membership in the Amalgamated Association.

8. This agreement is to remain in force three years from July 1, 1901, but terminable at 90 days' notice from either party on or after October 1, 1902.

This last clause is to be voted upon by the tin lodges and answer given immediately. If you agree to a three-year scale with 90 days' notification, vote yes. If you prefer the yearly scale, vote no. Do this at once or the above will become law by default.

Note.—This agreement is only for the scale year, ending June 30, 1902.

SHEET STEEL COMPANY.

Scale as printed is signed for mills of last year, but Hyde Park and Canal Dover.

STEEL HOOP COMPANY.

Scale as printed signed for mills signed for last year.

Mr. Shaffer ends his statement by saying he is willing to resign if the members think he is inefficient and incapable and his resignation will aid the cause.

New Publication.

The Roofing, Cornice and Skylight Manual. Published by the David Williams Company, 232-238 William street, New York. Price $1.50. Size 6 x 9½ inches; 175 pages; 170 illustrations and 10 plates.

As suggested by the title, the book consists of three articles. That on tin roofing, which has been prepared by an expert, treats the subject in detail, including flat and standing seam roofing, with instructions for flashing around chimneys, connecting roofs with wall flashing, and covering parapet walls and bulkheads. It also gives information on putting in valleys and on shingle flashing. An important table is presented from which the quantity of tin required for a roof can be determined, with directions for its use. The second portion of the book is devoted to cornice making. An important feature is a description of a shop equipment such as can be readily purchased or made and adapted to the country shop. This section of the book also dwells on the method of developing the patterns for much of the simpler work, as well as for cutting cornice miters, attaching molded gutters to brick walls, the attachment of eave trough to roofs of different kinds, the manufacture of round and square leaders, and the making of simpler ornaments.

The articles on skylight construction consist of two prize essays reproduced from *The Metal Worker*, which have been in considerable demand, as they are designed to cover the instruction needed for the production of skylights of all sizes, the development of hip bars and miters, also curb and side bars. Some of the illustrations are so large that special folding plate pages are used. One of the articles describes a skylight without a ventilator and the other with a ventilator in the top. The illustrations show the method of supporting glass, and also the method of catching the condensation which is experienced with the use of all skylights. The book is one that all sheet metal workers will find of value for reference, either section covering the subject discussed in a thorough and practical manner.

The six most lofty structures in Europe are the towers of Cologne Cathedral, now 516 feet 9 inches high; the towers of Rouen Cathedral, 491 feet 8 inches; the tower of St. Nicholas, at Hamburg, 473 feet 1 inch; tower of Anvers Cathedral, 472 feet; cupola of St. Peter's, Rome, 469 feet 2 inches, and the cathedral spire at Strasburg, 465 feet 2 inches.

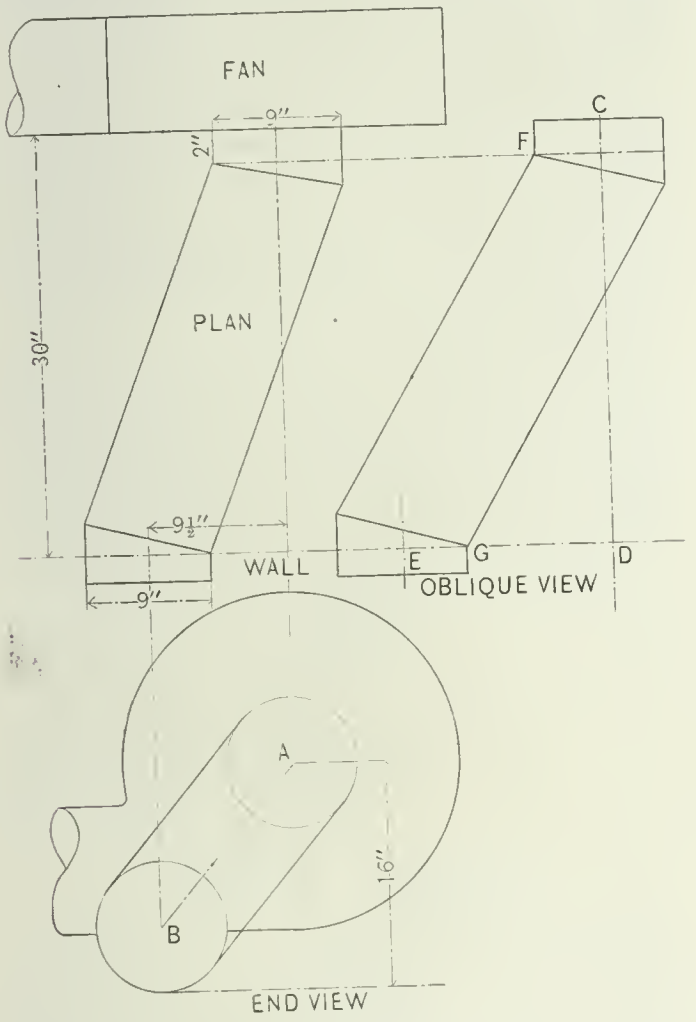
THE LETTER BOX.

Inquiries in regard to practical questions of general interest are invited, in reply to which we shall be glad to receive suggestions and information from our readers.

Correspondents are requested in all cases to give their names and addresses, which will not, however, be published or disclosed without their consent.

OBTAINING CORRECT ANGLES OF SPECIAL ELBOWS.

From H. J., Milwaukee, Wis.—I would like to have you publish in *The Metal Worker* the way to get the correct angle of the elbows shown in the inclosed sketch. The lower side of the pipe where it enters the wall is 16 inches below the center of the opening in the fan, while



Obtaining Correct Angles of Special Elbows.—Reproduction of Correspondent's Sketch, with Correct Diagram of Oblique Pipe.

it is also 9½ inches to the left, as measured between centers. The diameter of the pipe is 9 inches, and the side of the fan is 30 inches from the wall.

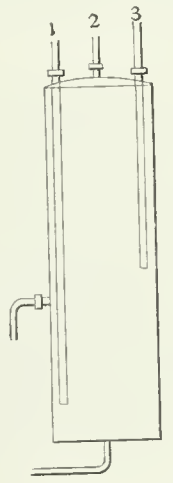
Answer.—The plan and end view of the accompanying diagrams are taken from our correspondent's sketch, and show the relation of the parts as he has described them. The drawing also shows a 2-inch collar projecting from the side of the fan, and he seems to be desirous of bringing the throats of his elbows exactly to the collar at one end and to the wall at the other. As neither the plan nor a side elevation would give the correct amount of deviation in a pipe to unite the two openings, an oblique view must be constructed. This can most easily be done by first extending the lines of the side of the fan and of the wall, as shown to the right, and crossing the same by any vertical line, as C D. From D set off on the wall line the distance A B of the end view, being the true distance between centers of the two openings, as shown by D E. From C and E set off each way one-half the diameter of the pipe, and draw short lines parallel to C D, as shown, and set off the projection of the collar below C, as shown by the dotted line. If it is desirable to have the throats of the elbows come exactly to the end of the collar and to the wall as before mentioned, this can be accomplished in the following manner: Set the dividers to the diameter of the pipe (9 inches), and placing one foot at the points F and G, describe short arcs toward the opposite sides of the pipe, as shown. Now draw one side of the oblique pipe from F tangent to the arc drawn from G, and the other side of the pipe from G tangent to the arc from F, and draw the miter lines from F and G, respectively, to the points of intersection opposite, which will give the correct angle of the oblique pipe.

The solution of a somewhat more intricate problem of this nature was published in *The Metal Worker* of December 16, 1899, from which our correspondent may obtain desirable information. In the article referred to, which is on page 53 of that issue, two or three typographical errors, however, occurred, which we take this opportunity to correct. The last word at the bottom of the first column (not) should be omitted, when the sentence would read, "Since the point *a* does rise," &c. In Fig. 2 of the engravings the letter *c* at the crossing of the dotted line A^2 A^3 with B B^2 should have been a capital C, as well as the *c* at the extreme right end of the line A^2 A^3, which would then read C^1.

QUESTIONS ON BOILER CONNECTIONS.

From B. & M., Northboro, Mass.—A question in boiler piping for hot water service has come up as to the proper way to make the connections with the boiler, and we hope that *The Metal Worker* will settle it for us. The boiler has three openings on the top, and we should like to know which should receive the supply from the tank and where the tubes should be used; also where the relief pipe should be connected.

Note.—Three openings in the top of a boiler are used only in a few sections of the country. Ordinarily the opening on the outer side of the boiler receives the longest tube and the connection from the cold water supply, whether it be from the tank or the street main. This long tube delivers the cold water below the side con-



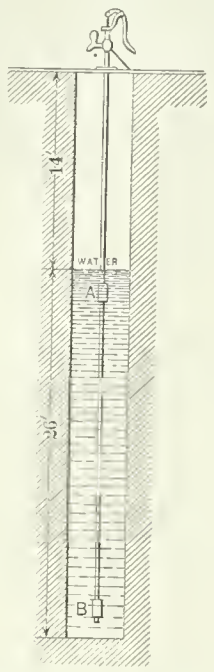
Questions on Boiler Connections.

nection from the water back so that the inflow of cold water does not chill the hot water coming from the water back. The long delivery tube should have a hole about ⅛ inch in diameter in it as near to the top of the boiler on the inside as possible. This is to prevent siphonage when the piping is so arranged that it might be possible, and particularly when the supply is taken from the street. The central opening is used for the hot water service connection, it being assumed that the hottest water in the boiler would be at the top and in the center. A small pipe is often carried up from this hot water service pipe to the top of the tank and the end turned down over it. This allows steam to escape from the boiler, and also air from the piping system in case it should accumulate or find entrance or be trapped as the plumbing system is filled with water. The other opening, with a short tube, is generally used for the connection of a return circulating pipe. The circulating pipe connects with the hot water supply pipe at the fixtures and is brought back to the boiler. This water, after making the circuit through the pipes, naturally is not as hot as when it left and enters the boiler through

the tube which delivers it down in the boiler, so that it will not reduce the temperature of the hottest water at the top of the boiler. The circulation pipe is used in order that hot water may be drawn at the fixtures as soon as the faucet is opened.

LOCATION OF PUMP CYLINDER.

From K. & S., Walcott, N. Y.—We have a well 40 feet deep in which the water rises to within 14 feet of the top, as shown in the sketch herewith. What will be the difference whether the pump cylinder is put down



Location of Pump Cylinder.

at the bottom of the well or only just below the water level, the pipe extending to the bottom of the well in both cases? In argument it has been stated that the pump will work just as easy with the cylinder in one place as in the other.

Answer.—Should the water in the well ever fall so that it would be 32 feet below the top it would be impossible to raise water with an ordinary lift pump. If the cylinder was put at the bottom of the well at B and a piston connected with it, a force would always have to be exerted necessary to lift the entire body of water in the pipe above the valve. If the water never falls below 20 feet from the top of the well and the valves was placed at that point, a smaller body of water would have to be lifted from A in the operating pump, consequently it would work easier. If the valve is located at this point an ordinary lift pump depending on atmospheric pressure could be used. If the cylinder is located at the bottom of the well a more expensive pump would be necessary.

TROUBLE WITH BRASS WATER HEATER.

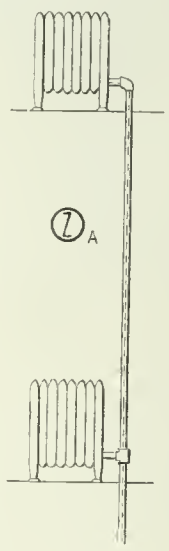
From P. W., P. O. Box No. 992.—I have been making experiments with a gas water heater, composed of drawn brass pipes and cast brass return bands. This water heater before being exposed to the heat of the burner was tested under pressure and no leak was discovered. Everything possible has been done to make the joints tight. After the burner gets into action, the water heater seems to leak at the joints, and, being tested again cold, the leaks developed during the exposure to the fire had become permanent. The one way that I can explain this is that the ratios of expansion in the drawn brass and the cast brass are different. Can I trespass on your kindness to give this matter your attention, and let me know your opinion as to the probable difficulty, and whether or not the ratios of expansion of the drawn and the cast metal are different?

Answer.—There is not enough difference in the expansion of cast and drawn brass to cause the leakage as stated. There is not more than 1-1000 inch difference per degree of temperature in 100 feet in length for the two kinds of brass. The trouble is in imperfect threads and slack screwing of the joints, with possibly no paint or cement in the threads. For perfect joints the threads should be tinned and screwed together hot, while the tin is melted. Such joints will never give out.

A SUGGESTION IN RADIATOR CONNECTION.

From A. H. F., New York.—Force of habit in people is hard to control, otherwise, in my opinion, good fitters would not advise "I. R.," whose inquiry appears in *The Metal Worker* of August 10, to run so many pipes and fittings to do a small piece of work. Why not use but one pipe one size larger than either of the two pipes that would ordinarily be used, and insert inside the single pipe a piece of sheet iron bent back on the edges, as shown in the sketch, so as to keep a sheet metal diaphragm in the center of the pipe at all times. The hot water flow would rise to one side of the sheet iron diaphragm and the cold water return or descend on the other side. With this method of fitting "I. R." would have many less threads to cut and much less pipe to handle, and his job would look much better. It is not difficult on a vertical run of piping to get circulation. It would be interesting to learn the results that would be obtained on a one-pipe vertical circuit built in the way recommended. The methods of piping recommended to "I. R." present from 4 to 14 right angles, while this method would cause but two.

Note.—It is probable that many of our readers would be glad to have further information as to how the hot water would get into the first-floor radiator, and how it would be shut off or regulated at either radiator. While benefit is frequently derived from pure suggestions, it is probable that recommendations made by this correspondent for the arrangement of piping would be of



A Suggestion in Radiator Connections.

greater value if they had been tested in practice. However, should "I. R." see fit to experiment, we hope that he will report the result not only for the benefit of "A. J. F.," but for all who do hot water heating. The diaphragm suggested has been used in hot water piping by the different experimenters in the past, and the fact that the use is not general might lead to the conclusion that it left something to be desired.

WANTS ROUND GLASS BALLS.

From W. T., Peterboro, N. H.—I shall be glad if some reader of *The Metal Worker* will inform me where I can buy perfectly round balls 1 inch to 1¼ inches in diameter, made of glass or stone. I have been buying glass agates, the same as boys play marbles with, but find they are not perfectly round.

COPPER LEADER PIPE HANGERS.

From Roy, Kingston, N. Y.—Where can I get wrought copper leader pipe hangers which will hold square leader several inches from the wall?

Answer.—It is not probable that such hangers will be found on the market. Our correspondent can readily have them made to order by any coppersmith.

TRADE REPORT.

MARKET SUMMARY.

Pig Tin has dropped about ¾c.

Copper prices are weak and nominal; demand is light and market unsettled.

Pig Lead is very quiet and unchanged in price.

Spelter is firm in price and in fair demand.

Antimony is unchanged.

Nickel remains firm and in good demand.

Tin Plates are still strong in price; Coke Tins scarce and high; Charcoals and Ternes 25c. to 50c. a box lower.

Black Sheets remain in scarce supply with prices strong.

Galvanized Sheets, while scarce, are quoted lower.

Scrap Iron is in better demand and stiffer in price.

Old Metals are quiet and unchanged.

Sheet Copper remains firm in price and is in good demand.

Pig Iron is stronger; Southern Foundry Iron has been advanced 50 cents per ton.

Hardware is moving in excellent volume and prices in general are unchanged.

Plumbers' Supplies continue in good demand, with prices strong in most lines.

Wrought Iron Pipe has undergone a decline in price, but smaller sizes are still scarce.

Plumbers' Brass Goods are unchanged in price and demand is active.

Wire Nails are steady in price and in better supply.

Cut Nails are less scarce; retail prices still show some variation.

Wire is still in large demand, with prices firm and unchanged.

White Lead is stiffer and in larger demand.

Linseed Oil prices are firmly held.

Spirits Turpentine is ¼c. lower.

METAL MARKET.

NEW YORK, September 27, 1901.

Pig Tin.—A fair business in futures was done during the week under review. Spot business is exceedingly light. Prices declined slightly from day to day, and were soft until the end of the week, when a slight improvement in London served to restore confidence to some extent in this market. Prices at the close were about ¾c. below those quoted in our last report, Straits Pig in small lots being quoted at 25¾c. to 26c.

Copper.—The Copper market is in an extremely unsettled condition. Rumors have been flying thick and fast, and the impression that the article is in a very unsound position is now universal. To add to the excitement prevailing in the Copper market, the course of the stock market relative to the great Copper company has occasioned much comment and increased the depressing effect. One of the wildest rumors of the week was circulated to-day in financial centers to the effect that on Saturday the United Metals Selling Company would issue a circular announcing a cut in the price to 13½c. While certain parties in the trade believe that under present conditions anything is likely to happen, the more conservative merchants doubt the rumor and hold that the pursuance of such a course would be most distressing to the company making it, as well as the trade in general. As for facts, none indicating future developments can be obtained at this time. In support of the argument that a cut of 3c. would be inadvisable at this time, it is held that the outside producers have been selling their product pretty well ahead, and would not be particularly affected by such a cut, as the price would still enable them to produce at a profit. The other faction of the market argues that something is bound to happen, as so far this year we have shipped 50,000 tons less than last year, and imported 15,000 more than last year. It is shown that the production this year has been the same as last year, and it is argued that the consumption has not been greater. Therefore, 65,000 tons must be somewhere, and as at present figures this represents something like $20,000,000, it is feared that the accumulation can no longer be allowed to continue. The market is entirely nominal, there being no demand whatever. Small lots of Lake Ingot are still quoted at 17¼c. to 17½c. per pound, and Casting Copper at 16¾c. to 17c.

Sheet Copper.—The demand for Sheet Copper is referred to as being of satisfactory volume, while prices are without change on the basis of 21c. per pound from store.

Pig Lead.—This metal is very quiet, and prices here are without change. Small lots of American Pig are quoted at 4.60c. to 4.62½c. per pound. St. Louis advices indicate no change in the conditions in that market.

Spelter.—A fair demand exists for this metal and prices are firm at the figures quoted last week—viz., 4.45c. to 4.50c. per pound for good Western brands in small lots. St. Louis advices report a very decided increase in the demand for Spelter in that market. The feeling seems to be that this better condition will hold and that prices will work higher.

Sheet Zinc.—The demand for Sheet Zinc is of ordinary proportions. Prices are without change, jobbers quoting 600-pound cask lots at 6¾c. per pound, and smaller quantities at 7c.

Antimony—Is unchanged. Hallett's in small parcels is quoted at 8½c. to 9¼c. per pound, and Cookson's at 10½c. to 11c.

Nickel.—There is no change in this market. Prices are firm, small lots being quoted at 60c. to 65c. per pound.

Aluminum.—A continued active demand prevails for Aluminum in all its forms, prices being the same as ruling for some time past. No. 1 Ingot, guaranteed over 99 per cent. pure, is quoted in small lots at 37c. per pound, and in 100-pound lots at 35c.

Tin Plates.—There is nothing new to report in connection with this market. The demand for spot Plates is of very small proportions, and the scarcity is still as pronounced as ever, especially in the line of Coke Tins, some sizes of which are practically out of the market. While the American Tin Plate Company have made no change in their quotations, purchasers who are obliged to buy Plates still have to pay a premium of $2 per box or more over the officially quoted rates. Bright Charcoal Plates and Terne Plates are relatively less strong than Cokes and rule from 25c. to 50c. a box lower than the price quoted by jobbers a week or two ago. The starting of the mills of the American Tin Plate Company has created an easier feeling in the market, although there is no prospect of any material relief from the present scarcity of Plates for some weeks to come. It is understood that the American Tin Plate Company are accepting orders for delivery only at convenience. The mills are booked up for about the whole of their output for the balance of the year. While no absolute prices can be made, $7 to $7.15 a box is probably a fair quotation for moderate sized lots of American Bessemer Coke Plates, IC, 14 x 20, at New York and Eastern points. A decline of 3 pence per box in the price of Welsh Coke Plates is reported from London.

Sheets.—Nearly all the Sheet mills of the American Sheet Steel Company made idle by the strike have been started and the output of Sheets is consequently materially increased. It will, however, take the mills two or three months to catch up with their back orders. Considerable scarcity still prevails in Eastern markets and

prices remain very strong, particularly on Black Sheets. There has been some cutting of prices on Galvanized Sheets, although the stocks of this material are still as light as at any time. Jobbers are now quoting Galvanized Sheets at 60 and 5 per cent. to 62½ per cent. off the list, while No. 27, One Pass, Cold Rolled Soft Steel Sheets are quoted at 4.15c. to 4.20c.

Chicago advices are as follows: The supply of Sheets from the mills is a little better, but it is much below the requirements of the trade. Manufacturing consumers are still greatly embarrassed for the lack of sufficient stock of Sheets and jobbers are steadily finding a strong demand for quick shipments from stocks. Manufacturers are promising deliveries of Light Sheets in five to six weeks, but this is not soon enough to meet the necessities of manufacturers of seasonable goods. Small lots are quoted at 4c. for No. 27 Black Sheets and 60 and 5 to 65 off for Galvanized Sheets.

Old Metals.—There is a better demand for Scrap Iron and prices are firmer. Old Metals of other descriptions are moving rather slowly and show no change in price. Dealers are paying about the following prices for moderate sized lots, delivered at New York or corresponding points:

Heavy Copper	per lb. 14½c.
Light and Tinued Copper	per lb. 12½c.
Heavy Brass	per lb. 9 c.
Light Brass	per lb. 7½c.
Lead	per lb. 4 c.
Tea Lead	per lb. 3¼c.
Zinc	per lb. 2¾c.
No. 1 Pewter	per lb. 18½c.
No. 2 Pewter	per lb. 9 c.
Tin Plate Scrap, per gross tou	$8.00
Wrought Iron Scrap, per gross tou	$10.50 to 11.00
Heavy Cast Scrap, per gross tou	10.25 to 10.50
Stove Plate Scrap, per gross ton	7.25 to 7.50
Burnt Iron, per gross ton	5.00 to 5.50

THE PIG IRON MARKET.

New York.—The event of the week has been the announcement to-day on the part of the leading Southern interests, acting in concert, of an advance of 50c. a ton on all grades of Iron, effective at once. This makes the price of No. 2 Foundry at Birmingham $11. We understand that sales have been quite up to production lately and have been very widely distributed. We quote: Lehigh, Schuylkill and Virginia Irons, No. 1, $16 to $17.50; No. 2 X, $14.75 to $15.75; No. 2 Plain, $14 to $14.50; Tennessee and Alabama brands, No. 1 Foundry, $15 to $15.50; No. 2 Foundry, $14.75 to $15; No. 1 Soft, $14.75 to $15; No. 2 Soft, $14.50 to $14.75; No. 3 Foundry, $13.75 to $14; No. 4 Foundry, $13.50 to $13.75.

Chicago.—Business is increasing in volume. The transactions for the past week are reported to have considerably exceeded in tonnage the business taken during the preceding week. No very large contracts are reported; the buying is general. Prices are stiffening and will increase the buying movement. Southern furnace companies are notifying their agents that they are no longer able to promise shipments in October or November, and the lowest sellers are advancing their prices from 25c. to 50c. per ton. It is believed that very few opportunities are now open to purchase No. 2 Southern Foundry Pig Iron at less than $14.40, Chicago. We quote as follows:

Lake Superior Charcoal	$17.00 to $18.00
Local Coke Foundry, No. 1	15.50 to 16.00
Local Coke Foundry, No. 2	15.00 to 15.50
Local Coke Foundry, No. 3	14.50 to 15.00
Local Scotch, No. 1	15.75 to 16.25
Ohio Strong Softeners, No. 1	16.00 to 16.50
Southern Silvery, according to Silicon	14.90 to 15.15
Southern Coke, No. 1	14.65 to 14.90
Southern Coke, No. 2	14.15 to 14.40
Southern Coke, No. 3	13.65 to 13.90
Southern Coke, No. 1 Soft	14.90 to 15.15
Southern Coke, No. 2 Soft	14.15 to 14.40

Philadelphia.—The market has a very strong undertone. Some of the large interests are considering whether the time is not favorable for making a slight advance in prices. Stocks are extremely light and sales during the month have been so heavy that the output for the remainder of the year is practically all under control. Under these conditions producers feel themselves in a position to be very independent, and as a rule they require full prices or turn down the offers. For the present firm prices may be expected, but it is doubtful if any permanent advance could be maintained. Sales during the week included all grades of Iron and were practically at last week's figures. Prices for city and nearby deliveries were about as follows, and from 25c. to 50c. less at points within a radius of 100 miles south or west: No. 1 X Foundry, $15.50 to $16; No. 2 X Foundry, $14.85 to $15.25; No. 2 Plain, $14.35 to $14.75.

Pittsburgh.—The United States Steel Corporation have bought 40,000 tons of Standard Bessemer Iron, which has practically cleaned up all the available Iron for October shipment. The market is naturally very strong. Foundry Iron is firmer and Southern furnaces are asking higher prices. We quote No. 1 Foundry at $14.50 to $14.75; No. 2 Foundry, $14 to $14.25, and No. 3, $13.75 to $14.

Cincinnati.—The Pig Iron market is in a very satisfactory condition. While the amount of business which has been transacted during the past week has not been extremely large, yet it has shown a steady increase over the preceding week, and has all the earmarks of health. Quite a number of 1000-ton orders have been closed and a large number for smaller amounts, the tonnage on the whole being quite good. The feature of the situation is perhaps the scarcity of Foundry Iron for delivery this year, most of the tonnage placed being for next year. The fact of the scarcity of immediate delivery stock is one of the chief factors in the strength of the market to-day. Prices have advanced fully 20c. per ton, and there is a striking unanimity of opinion as to values. We quote, f.o.b. Cincinnati:

Southern Coke, No. 1	$13.75 to $14.00
Southern Coke, No. 2	13.25 to 13.50
Southern Coke, No. 3	12.75 to 13.00
Southern Coke, No. 4	12.25 to 12.50
Southern Coke, No. 1 Soft	13.75 to 14.00
Southern Coke, No. 2 Soft	13.25 to 13.50
Southern Coke, Gray Forge	12.25 to 12.50
Southern Coke, Mottled	12.25 to 12.50
Ohio Silvery, No. 1	14.60 to 15.00
Ohio Silvery, No. 2	14.10 to 14.60
Lake Superior Coke, No. 1	15.10 to 15.35
Lake Superior Coke, No. 2	14.60 to 15.10
Lake Superior Coke, No. 3	14.10 to 14.60

St. Louis.—The Pig Iron market is about in the same condition as a week ago, a very cheerful feeling being prevalent. A large volume of sales ranging in quantity up to 500 tons, together with some larger orders, are held to be a most healthy indication of the quality of the buying power in the market. The buying and inquiries are from the best sources and go to prove the absence of any speculation. We quote as follows for cash, f.o.b. St. Louis:

Southern, No. 1 Foundry	$14.25 to $14.50
Southern, No. 2 Foundry	13.50 to 13.75
Southern, No. 3 Foundry	13.00 to 13.25
Southern, No. 4 Foundry	12.50 to 12.75
No. 1 Soft	14.00 to 14.25
No. 2 Soft	13.50 to 13.75

CHICAGO REPORT.

Scrap Iron and Steel.—Everything in the line of Old Iron and Steel is in better demand, Wrought Scrap being the only class of material disposed to lag behind. Dealers quote the following buying prices, in carload lots, Chicago delivery:

	Per net ton.
Country Wrought Scrap	$11.00 to $12.00
Machinery Cast	10.50 to 11.00
Malleable Cast	10.00 to 11.00
Stove Plate (free from burnt)	.... to 8.00
Burnt Iron and Grate Bars	5.50 to 6.00
Sheet Iron and Hoops	6.00 to 7.00
Plow Steel	.... to 10.00
Breaking Stock	9.00 to 10.00
No. 2, such as Shovels, Hoes, &c	.... to 7.00
Old Boilers—whole (Iron)	6.00 to 7.00
Old Boilers (Iron) cut in single Sheets and Rings	9.50 to 10.00
Old Gas Pipe and Boiler Tubes	11.00 to 11.50
Cast Borings	4.25 to 4.50
Turnings	9.50 to 10.00
Horseshoes	.... to 13.00

Old Metals.—The market is steady, with a fair demand. Dealers quote buying prices on small lots as follows:

	Per lb.
Copper Wire and Heavy	14¾c.
Copper Bottoms	13¼c.
Copper Clips	14¼c.
Red Brass	13⅜c.
Yellow Brass	9½c.
Red Brass Borings	11½c.
Yellow Brass Borings	8¾c.
Light Brass	7¾c.
Pipe Lead	4 c.
Tea Lead	3½c.

Zinc	2⅝c.
Tin Foil	22 c.
Pewter, No. 1	19 c.
Pewter, No. 2	10 c.

Old Rubber.—The demand is moderate. Dealers' buying prices are as follows:

	Per net ton.	Per lb.
Garden Hose	$23.00	.....
Air Brake Hose	42.00	.....
Rubber Shoes	....	7½c.
Rubber Car Springs	....	4¾c.
Inside Bicycle Tubing	....	21 c.
Outside Tubing	....	7¼c.
Black Rubber	....	4¼c.
White Rubber	....	8½c.

Rags.—Buying price of good country Mixed Rags, Chicago delivery, is 70c. to 80c. per 100 lbs., in any quantities.

Anthracite Coal.—The heavy demand has greatly reduced local stocks and the Eastern mining companies advise their agents that the supply cannot be materially increased. Higher prices are expected. The schedule for carload lots is as follows:

	Grate.	Egg and Stove.
Chicago	$5.75	$6.00
Milwaukee, Wis.	5.75	6.00
St. Louis	6.20	6.45
Kansas City, Mo.	8.25	8.50

THE HARDWARE TRADE.

The past week has witnessed comparatively few important changes in the situation. Trade continues in excellent volume. Both jobbers and manufacturers report good orders from the retail trade, indicating a prosperous condition of things. Prices are without important change. On the whole the tone of the market is good, but in several lines the element of uncertainty is having some effect on business. Thus, Nails and Wire, while prices are well maintained in spite of the growing and aggressive competition, are commodities which the trade are purchasing with reserve in view of the possibility of a reduction sooner or later in price. Notwithstanding the continuance of the association prices on Shovels, there is a feeling that an important break must before very long occur in this line. A material reduction has been effected in the price of Scythes, but this will probably encourage the trade to purchase more freely than they did at the extremely high prices which have prevailed. The Steel Goods market, too, is an open one, and buyers are holding off. These and other illustrations which might be given are, however, exceptions to the general rule, and any existing weakness is accounted for by the special circumstances of the case. On the other hand, many lines are exceedingly firm, and even higher, on account of scarcity. Prominent among these are Tin Plates and Sheets and the various kinds of goods in the manufacture of which they are used.

NOTES ON PRICES.

Wrought Iron Pipe.—The situation in the Wrought Iron Pipe market has changed since last issue. The artificial prices made and maintained by the jobbers of Steam and Hot Water Supplies have undergone a decline and the classification has again been adjusted to suit the new conditions and prices. All sizes of Pipe are still more or less scarce, the ¾, 1 and 1¼ inch sizes being practically entirely out of the market. These are the sizes most in demand just now, and as the winter is coming on the probability is that they will continue scarce for the remainder of this year. The reclassification of sizes puts all Pipe from ⅛ to ½ inch under one discount and all the other sizes from ¾ to 12 inch inclusive under another discount. The National Tube Company, under date of September 21, issued a statement to the effect that all of their mills were in full operation and that they were prepared to accept business at regular prices, but the shipments would be subject to their convenience. At no time during the strike has the mill price of Pipe changed, and there is no likelihood of any change taking place this year. Prices on Pipe are now quoted for prompt acceptance and shipment by the jobbing trade as follows:

	Black.	Galv.
⅛ to ½ inch, inclusive	50%	40%
¾ to 12 inch, inclusive	60%	45%

Plumbers' Brass Goods.—The demand for Plumbers' and Steam Fitters' Brass Goods continues in good volume, and prices are well maintained so far. There is an impression, however, that the unsettled condition of the Copper market may have a depressing effect upon the price of Brass, in case prices for the raw material should recede materially.

Wire Nails.—The demand for Wire Nails is not quite so pressing, and the mills are making shipments more promptly. At competitive points some concessions in prices are said to be made. The probable difficulty of obtaining Steel for some time to come, however, is alluded to as likely to keep the Wire Nail market fairly steady. Small lots from store are quoted at $2.60 per keg.

Cut Nails.—The demand for Cut Nails continues in fair proportions. The advance in price is not held to in all cases for Nails from store, small lots being quoted in New York at $2.18 to $2.30 per keg.

Wire.—There has been a material increase in the output of Plain Wire recently, and the mills are now able to make shipments as fast as wanted by the trade. The volume of business is heavy, and the market is strong. Plain Wire in small lots is quoted at 2.60 cents, and Galvanized at 3 cents.

White Lead.—No change has been made in the price of White Lead in Oil as a result of the advance in the price of Linseed Oil, although it has had the effect of stiffening the market. Less is heard of irregularities in Lead prices. The demand shows some increase, and quotations are firm at former figures.

Linseed Oil.—The demand for prompt shipment of Linseed Oil is less urgent. It is understood that large consumers made contracts during the recent slump in prices, covering their requirements for the balance of the year. Spot Oil is scarce and quotations are still held up to. According to reports the Flax Seed crop, while it will probably be large enough to meet requirements, will not be in excess of the increasing domestic demand. Those well informed see no reason for abnormally low prices for Oil in the near future. The retail price of Raw Oil is 66 to 67 cents per gallon; Boiled Oil is 2 cents per gallon advance on Raw.

Spirits Turpentine.—The Turpentine market remains firm and prices steady. Large consumers are holding off for lower prices. The demand is confined to small lots, which are quoted at about 37½ to 38 cents per gallon.

TRADE NOTES.

Baker & Co., Platinum refiners, of Newark, N. J., with New York office at 120 Liberty street, are distributing an attractive little pamphlet on the "Alchemistic Symbols," giving a brief account of their origin and meaning.

The Scarborough Mfg. Company of Camden, N. J., have been incorporated with a capital stock of $100,000, to manufacture Water Filters. George Searborough, John H. Scarborough and George W. Perkins are the incorporators.

Charles A. Leppents, lately associated with John Davies & Son, and previously with Howell & Saxton, has established himself in the foundry business at 128-136 Second avenue, Brooklyn, N. Y., for the purpose of manufacturing Cast Iron Columns and General Structural Cast Iron Work.

L. & R. Wister & Co., 672 Bullitt Building, Philadelphia, have opened offices in the Fitzsimmons Building, 331 Fourth avenue, Pittsburgh, with Stuart B. Marshall resident manager. The L. & R. Wister Company are sales agents of American Sheet Iron Company; Dunbar Foundry, Forge and Basic Pig; for Saxton Furnace Company's Foundry and Forge Iron; Consolidated Iron & Steel Company's Bar, Band and Hoop Iron. The concern also deal in Scrap material.

An International Aluminum Association.

It has been announced from Germany that negotiations are proceeding between the Neuhausen Aluminum Company, the big Swiss producer, and the Pittsburgh Aluminum Company, who are said to dominate the American market, with a view to the establishment of a convention "for the improvement of the industry," which is a euphemism for raising prices. According to *Engineering*, the negotiations promise to be successful, and if they should turn out so no secret is made of the intention to put up values immediately. Nothing is said about the inclusion of the English company, or about the French and the other Swiss producers, but no doubt one and all will give at least moral support to any efforts toward the end designed. The production of aluminum being limited, and in the hands of a very few individuals a scheme to regulate prices is easy, given active or passive sympathy on the part of the components, the more especially as the demand is about up to the output. Authoritative figures for last year are not yet available, but the compilations of the Metal Gesellschaft of Frankfort show that for 1899 the aggregate was 5,748,380 kg., of which the United States furnished 2,948,380 kg., Switzerland 1,300,000 kg., France about 1,000,000 kg. and England about 500,000 kg. The Swiss figures include the production of the Rheinfelden Works, as well as of the Neuhausen, but not that of the Lead-Gestein, which had then been but a short time in operation. It would be interesting to know if anything has been done to secure the adhesion of the Rheinfelden and the Lead-Gestein as members of the convention. In that case and assuming that the Pittsburgh Company really do dominate the American market, control is assured, irrespective of the rest, who, as we have already said, will probably support the movement. If the rate of increase of previous years was maintained in 1900, the total production must have exceeded 7,000,000 kg. Certainly the producers have done their best hitherto to keep pace with the demand. In 1898, 4,033,704 kg. were reported; in 1897, 3,394,400 kg.; in 1896, 1,659,676 kg.; in 1890, 175,388 kg. and in 1895, 13,292 kg. Germany is the largest consumer, drawing most of its supplies from Switzerland and smaller measure from France. It imported 922,000 kg. in 1899. The American industry has made the most striking progress. In 1893 only 141,336 kg. were produced. By 1896 the quantity had increased to 589,676 kg.; by 1897 to 1,814,400 kg. and by 1899 to 2,948,380 kg. Switzerland has advanced with more deliberation from 650,000 kg. in 1895 to 800,000 kg. in 1898 and 1,300,000 kg. in 1899.

The Louisiana Purchase Exposition.

The Louisiana Purchase Exposition, to be held in St. Louis in 1903, will have no director-general, such as former expositions have had, to be the executive head of all departments and to have the direct supervision.

It will have four director-generals, or directors-in-chief. That plan of organization has been practically determined upon. Two of the four have been selected so far as the Organization and Executive committees are concerned. The four men will divide the duties of the director-general, and with co-ordinate powers, and will be responsible directly to the president and Executive Committee of the company. Isaac S. Taylor takes the position of Director-General or Director-in-Chief of Construction and Maintenance, and Frederick J. V. Skiff the position of Director-General or Director-in-Chief of Exhibits.

The letting of contracts aggregating about $11,000,000 for construction work on the buildings and grounds of the Louisiana Purchase Exposition will begin about December 1. It is planned to apply about $7,000,000 of this amount on the buildings and about $4,000,000 on the grounds. The letting will begin with the contracts for four big exhibit buildings, which, with their surroundings, will, it is estimated, cost about $4,000,000. The main buildings will be larger than those of any previous exposition in Europe or America. Some will exceed similar buildings at former expositions by over 25 per cent.

The site has been selected to embrace the unfinished half of one of the largest public parks on earth—Forest Park. The part of the park to be used contains 668 acres, and about 300 acres of surrounding property will be added to bring the entire area of the site up to about 1000 acres.

An advance bulletin issued by the United States Census Bureau on the manufactures of the State of Iowa shows a large increase in all the features covered by the census. The number of manufacturing establishments in Iowa has almost doubled in the past ten years and the amount of capital invested has increased about one-third. The following is a brief statement of the results of the census in Iowa:

	1900.	1890.	Increase. Per cent.
Number of establishments..	14,819	7,440	99.2
Capital	$102,733,103	$77,513,097	32.5
Wage earners, average number	58,553	51,037	14.7
Total wages.....	$23,931,680	$20,429,620	17.1
Miscellaneous expenses....	7,988,767	5,732,206	39.4
Cost of material used.....	101,170,357	79,292,407	27.6
Value of products, including custom work and repairing	164,617,877	125,049,183	31.6

CONTENTS.

Editorials— PAGE.

A Promising Outlook 45
The Cost of the Strike 45
Museums of Sanitation 45
German Heating and Ventilating Engineers 46
The Consolidation of Hardware Johbing Interests 46
County Fair Exhibits 47
The Western Stove Trade 48
The Philadelphia Stove Trade 48
The Cause of Many Stove Troubles 48
Tales from the Waldorf-Astoria 49
The Simpson Multiple Action Heater. Illustrated 49
A Voice from California 50
Detroit Stove Works 50
Some New Gas Stoves and Ranges 50
Odd Plates 51
The Wilke Glass Lined Refrigerator. Illustrated 52
Safety Ladder Hook. Illustrated 53
Stove and Hardware Dealers 53
Composition of Glass 53
Meeting of German Heating and Ventilating Engineers 54
James Ahern 55
The Farnan Brass Goods 55
A New Pipe Cutting Plant 55
Fine Plumbing Goods 55
American Radiators 56
Hopper and Chute for Lead. Illustrated 56
Elliott Perry Gleason 56
Sanitary Appliances for Large Buildings 56
Water Heating. 57
New York City Notes 58
Heating and Plumbing Notes 58
New Firms and Changes 59
Painting Tin Roofs 60
The Valve Light Ventilator. Illustrated 60
The X L C R Ball Bearing Caster. Illustrated 61
Herringbone Lath. Illustrated 61
Flashings 61
Terms of Strike Settlement 62
New Publication 62

The Letter Box—
Obtaining Correct Angles of Special Elbows. Illustrated 63
Questions on Boiler Connections. Illustrated 63
Location of Pump Cylinder. Illustrated 64
Trouble with Brass Water Heater 64
A Suggestion in Radiator Connection. Illustrated 64
Wants Round Glass Balls 64
Copper Leader Pipe Hangers 64

Trade Report—
Market Summary 65
Metal Market 65
The Pig Iron Market 66
Chicago Report 66
The Hardware Trade 67
Notes on Prices 67
Trade Notes 67

An International Aluminum Association 68
The Louisiana Purchase Exposition 68
Metal and Miscellaneous Prices 69

Labor Exchange—
Help and Situations Wanted 73

ROOFING SUPPLIES, METALS, TIN PLATES, &c.

REVISED SEPTEMBER 27, 1901.

Aluminum—

No. 1 Aluminum (guaranteed over 99% Pure), in ingots for remelting.
Small lots.....₰ ℔, 37¢
100-℔ lots.....₰ ℔, 35¢
Aluminum Sheet, B. & S. gauge.
In lots of 50 ℔s or more.

Wider than	6-in.	14-in.	24-in.
And including	14-in	24-in.	30-in.
	₰ ℔	₰ ℔.	₰ ℔.
Nos. 13 to 19	$0.42	$0.44	$0.47
" 20	.44	.46	.49
" 21 to 23	.46	.48	.51
" 24	.46	.50	.53
" 25	.47	.51	.54
" 26	.47	.54	.59
" 27	.48	.57	.62
" 28	.48	.57	.64
" 29	.49	.60	.69
" 30	.50	.64	.77

Note.—Lots of less than 50 ℔s 5¢ ₰ ℔ extra.

Antimony—

Cookson.....₰ ℔, 10½@11¢
Hallett's .....₰ ℔, 8½@9¼¢
U. S.....₰ ℔, 8½@9 ¢

Brass, Roll and Sheet..15@20%

Conductors—Corrugated.

Round or Square.—

Galvanized ½ or more, N'st'd.....70&5%
" Not Nested.....70&2½%
" Plain Round, ½ or more, Nested.....70&5%
Galvanized, Plain Round, Not Nested. 70&2½%

Spiral Riveted.

Galvanized.....40%
See also *Elbows and Shoes; Eave Trough Miters; Strainers, Conductor.*

Conductor Strainers—

See *Strainers, Conductor.*

Copper—

Lake Ingot.....17½@17¾¢
Casting.....16½@17 ¢
Sheet and Bolt.....21¢ ₰ ℔ basis
Cold Rolled Sheets.....22¢ ₰ ℔ basis
Cold Rolled and Polished Sheets ..... 23¢ basis
Planished Sheets.....24¢ basis
Bottoms, Pits and Flats....₰ ℔ 25¢ basis

Eave Trough, Galvanized

Territory.	L. C. L.	
Eastern	.75&10%	Carloads extra 12½%
Central	.75&7½%	
Southern	.70&12½%	
S. Western	.70&10%	

Terms, 2% for cash.

Eave Trough Mitres—

Lap or Slip Joint.....list, 25%

Elbows—Plain Adjustable—

Eastern List.

Tin.....30%
Galvanized.....30%
" Perfect " Elbows.....40%

Stove Pipe--

Four-Piece

	4	4½	5	5½	6-inch.
No. 1.	$0.80	.85	.90	1.00	1.05 per doz.
No. 2.	.65	.70	.75	.80	.85 "
No. 3.	.60	.63	.65	.70	.80 "

Elbows and Shoes—

Galvanized.....60%

Gasoline—

See *Petroleum Products.*

Iron, Sheet—*Black.*

	One Pass, C. R., Soft Steel.	R. G. Cleaned.
Nos. 14 to 16	₰ ℔ 3.80	3.85¢
Nos. 18 to 21	₰ ℔, 3.90	3.95¢
Nos. 22 to 24	₰ ℔, 4.00	4.05¢
Nos. 25 and 26	₰ ℔, 4.10	4.15¢
No. 27	₰ ℔, 4.20	4.25¢
No. 28	₰ ℔, 4.30	4.35¢

Russia, Planished, &c.

Genuine Russia, according to assortment.....₰ ℔ 11@11½¢
Do. Stained.....6¢@10¢
Patent Planished. ₰ ℔ A, 12¢; B, 11¢ net

Galvanized.

Nos. 10 to 16.....₰ ℔, 12¢
Nos. 17 to 21.....₰ ℔, 13¢
Nos. 22 to 24.....₰ ℔, 14¢
Nos. 25 to 26.....₰ ℔, 15¢
No. 27.....₰ ℔, 16¢
No. 28.....₰ ℔, 17¢
No. 29.....₰ ℔, 19¢
No. 30.....₰ ℔, 21¢
60&5% off.
36 in. 1¢ ₰ ℔ higher.

Lead—

American Pig.....4.60@4.62½¢
bar.....5½@5¼¢
Pipe.....6½¢.....20% off
Tin Lined Pipe.....12½¢.....20% off
Block Tin Pipe.....40¢.....20% off
Sheet Lead, full rolls... 7¼¢ .....20% off
Sheet Lead, cut.....7¾¢.....20% off
Old Lead in exchange, 4½¢ ₰ ℔.

Mitres, Eave Trough—

See *Eave Trough Mitres.*

Nickel—

Per ℔.....60@65¢

Paints, Oils, &c.—

Leads—

Lead, American White, in Oil; Lots of 500 ℔ or over..... @ 6½
Lots less than 500 ℔..... @ 7
Lead, White, in oil, 25 ℔ tin pails, add to keg price..... @ ½
Lead, White, in oil, 12½ ℔ tin pails, add to keg price..... @ 1
Lead, White, in oil, 1 to 5 ℔ assorted tins, add to keg price... @ 1½
Lead, White, Dry in bbls.....5¾ @ 6
Lead, Red, bbls., ½ bbls. and kegs: Lots 500 ℔ or over..... @ 6
Lots less than 500 ℔..... @ 6½

Oils—

Linseed, City, raw.....₰ gal.....65@66
Linseed, City, boiled.....67@68
Linseed, State and West'n, raw....65@66

Spirits Turpentine—

In Southern bbls.....36¼@36¾¢
In machine bbls.....36¾@37¼¢

Putty—

In bulk.....$1.25
In bladders..... 2.25
In cans 12 ℔ to 25 ℔..... 2.25
In cans 1 ℔ to 5 ℔..... 3.25

Petroleum Products—

In Barrels (Barrel Included)

Stove Gasoline.....₰ gal. 12½@13¢
Kerosene.....₰ gal. 13@13½¢

Pipe, Drain.....40%

Pipe, Spiral—

See *Conductors.*

Registers—

List Sept. 2, 1901.

Black Japanned.....70%
White Japanned.....70%
Nickel Plated.....70%
Bronze Finishes in Imitation of Gold, Silver, Copper or Bronze.....70%
Electroplated in Brass, Bronze or Copper.....70%
White Porcelain.....60%
Solid Brass and Bronze Metal.....50%

Roofing Material—

1 Ply Tarred Paper, ₰ ton.$26.00@27.00
2 Ply Tarred Paper...₰ roll, 108 sq. ft. 40@50¢
3 Ply Tarred Paper..₰ roll, 108 sq. ft. 60@70¢
Slater's Felt.....roll 500 sq. ft., 50@60¢
Roofing Pitch.....₰ bbl $2.38

Rosin—

Common and Good—Strained.

Rosin, C. & D	₰ bbl. $1.40	@$1.42
Rosin, E. & F	₰ bbl. 1.55	@ 1.65
Rosin, G. & H	₰ bbl. 1.70	@ 1.75
Rosin, I. & K	₰ bbl. 1.80	@ 2.15
Rosin, M. & N	₰ bbl. 2.60	@ 3.15

Shoes and Elbows—

See *Elbows and Shoes.*

Slate Roofing—

f. o. b. cars, Quarry Station.

	According to size.
Pennsylvania:	
Best Bangor, ₰ sqr	$3.25@$4.50
No. 1 Bangor Ribbon, ₰ sq	3.00@ 3.50
Pen Argyle, ₰ sqr	3.00@ 3.75
Peach Bottom, ₰ sqr	4.85@ 5.60
No. 1 Boys, ₰ sqr	3.35@ 3.55
No. 1 Chapman Keystone, ₰ sqr	3.25@ 4.25
Vermont:	
Sea Green, ₰ sqr	$2.00@$3.00
Purple, ₰ sqr	3.75@ 4.25
Unfading Green, ₰ sqr	3.25@ 4.50
Red, ₰ sqr	6.50@11.00
Maine:	
Brownville, Unfading Black: No. 1 quality	$5.25@7.50
No. 2 quality	$4.25@6.00

Solder—

½&½ guaranteed.....18½@19¢
No. 1.....15@17¢
Prices of Solder indicated by private brands vary according to composition.

Soldering Fluids—

	Per Pound. Barrels	Smaller Q'ntities
Concentrated Flux	4c	5c
Eureka Flux:		
Triple Strength	3c	3½c
Extra Concentrated	4½c	5c
Crystal	..	7c
Gedney's Fluid	2c	2c
Lennox Fluid	2c	3c
Perfection Flux	3c	3½@1c

Yager's Salts, 1 lb. bottles.....each, 60%
5 lb. bottles, per lb., 40%

Soldering Coppers—

Per ℔.....22@24¢

Spelter—

Western Spelter.....4.45@4½¢

Spiral Pipe—

See *Conductors.*

Stove Pipe Elbows—

See *Elbows, Stove Pipe.*

Stove Trucks—

See *Trucks, Stove.*

Strainers, Conductor—

Galvanized.....50%

Tin Pigs and Bars—

Banca, pigs, ₰ ℔.....26¾@27¢
Straits, pigs, ₰ ℔.....26½@26¾¢
Straits, in bars, ₰ ℔.....27¼@27½¢

Tin Plates, American Charcoal Plates, Bright—

N. B.—The price of 20 x 28 sizes is double the price of 14 x 20.

Calland Grade:

IC,	14 x 20	$8.00
IX,	14 x 20	9.50
IXX,	14 x 20	10.75
IXXX,	14 x 20	12.00
IXXXX,	14 x 20	13.25

Melyn Grade:

IC,	14 x 20	7.50
IX,	14 x 20	9.00
IXX,	14 x 20	10.25
IXXX,	14 x 20	11.50
IXXXX	14 x 20	12.75

Allaway Grade:

IC,	14 x 20	7.00
IX,	14 x 20	8.10
IXX,	14 x 20	9.20
IXXX,	14 x 20	10.30
IXXXX,	14 x 20	11.40

Coke Plates, Bright—

Bessemer Steel, or equal to J. B. Grade, full weight } IC, 14 x 20.....$7.15@7.25
" " IX, 14 x 20.....$8.00@8.25

N. B.—The reduction per box on lighter Plates than IC, 14 x 20, is as follows:

100 ℔.....15¢
95 ℔.....20¢
90 ℔.....25¢
85 ℔.....30¢

Terne Plates—

N. B.—The following prices are for IC 20 x 28, the rate for 14 x 20 being half as much. IX is usually held at $2 per box advance for 8 to 10 ℔ coating and $2.50 to $3 advance for 15 ℔ and upward.

About 40 ℔ coating..... $18.00@18.50
About 30 ℔ coating..... 17.25@17.75
About 20 ℔ coating..... 15.25@15.75
About 15 ℔ coating..... 13.25@13.75
About 8 ℔ coating..... .....@12.50

Boiler Plates, American—

IXX, 14 x 26..(112 sheets).....$16.00
IXX, 14 x 28..(112 sheets)..... 17.00
IXX, 14 x 31..(112 sheets)..... 18.50

Troughs, Eave—

See *Eave Trough.*

Trucks, Stove—

Improved Lock Frame, per doz...$15.00
Steel Lock Frame, per doz..... 18.00
Daisy Improved pattern, ₰ doz... 18.00

Tubes and Tubing—

Brazed Brass, List Feb. 26, 1896.30@35%
Copper and Bronze, 3c per lb. list more than Brass.
Seamless Brass Tubes, net list Feb. 6, 1899.
Tin.....50%
Galvanized.....50%
Fittings for do.....40%

Zinc—

600 ℔ casks ₰ ℔.....6¾¢
Per ℔.....7¼¢

PLUMBERS' AND STEAM FITTERS' SUPPLIES.

Boilers, Galvanized—

Standard Boilers:
30 gal.....65&10@70%
35 and 40 gal.....65@65&10%
Other sizes up to 52 gal....60@60&10%
52 gal. and above..... .....60@60&5%
Extra Heavy Boilers:
18 to 52 gal..... 50&10@60%
53 gal. and above ....50@55%

Brass Work, Plumbers'—

List of December 7, 1896.

Compression:
Basin Cocks .....65@65&5%
Bath Cocks and Double Bath Cocks.. 65@70%
Bibs. .....65@65&5%
Bibs, Flanged.....65@70%
Fuller:
Bibs.....70@70&10%
Basin Cocks, Nos. 1 to 4.....70&10@75%
Bath Cocks, No. 4½.....$2.00 net
Ground Key Work:
Finished Bibs.....60@65%
Rough Bibs and Stops.....65@70%
Rough Stop and Stop and Waste Cocks.....70@70&5%
Rough Stop and Stop and Waste Cocks, Patented..... 65@65&5%

Miscellaneous—

Basin Clamps.. .....60@65%
Basin Plugs.....60@65%
Chain Stays. .....60&5@70%
Iron Boiler Couplings:

	Lead Pipe.	Iron Pipe.
Plain Face..₰ set	$0.95	$1.05
Ground Face ₰ set	$1.00	$1.10

Sink or Bath and Wash Tray Plugs.60@65%
Soldering Nipples.....70&5@75%
Soldering Unions.....70&5@75%

Cocks, Valves, &c.—

Cocks—

Brass—

Air and Radiator Air .....70@70&5%
Gas Meter and Union Meter..65@65&10%
Steam.....65@65&10%

Iron—

All Iron.....65@70
Iron with Brass Plugs.....60@65%

Valves—

Brass—

Garden Hose..... .....65&10@70%
Globe and Angle, hose outlet.65@65&10%
Globe, Angle and Cross....65@65&10%
Horizontal, Vertical and Angle Check.. 60@65%
Radiator.....65@70%
Safety.....55%
Safety, Low Pressure.....55%

Jenkins Bros.':
All Iron, except Gate.....40&5%
All Iron Gate..... .....35@40%
Iron Body, except Gate..... .....60%
Iron Body Gate..... .. ..50@50&5%

Jenkins' Disc:
Check... .....60%
Gate 60%
Globe, Angle and Cross.....60%
Radiator.....60%
Radiator, Corner.....65%
Safety.....50%

Iron—

Iron Body.....70@70&5%

Earthenware—

Brown Glazed.....20%
Porcelain, List of Aug. 15, 1901: Class
Basins, Urinals and Hoppers.... } A, 30%
Closet Bowls, Sundries, Washouts and Pedestals..... } B, 40%
C, 50%

Fittings—

Brass Fittings—

Finished.....65@70%
Rough .....65@70%
Bushings.....65@70%
Unions, Rough and Finished....70@70&5%

Iron—

List of Oct 7, 1899.

Cast Iron Fittings, Black and Galvanized, Standard sizes..... 60&10@70%
Cast Iron Bushings and Plugs.... 65@75%
Cast Iron Flanges..... 65@75%
Malleable Iron Fittings..... 50@55%
" " Bushings..... 65&5@70%
" " Unions..... 70@70&10%
Wrought " Nipples.....65@70%
" " Couplings... .....65@70%
" " Long Screws.....65@70%
Pipe Hangers, Universal.....50%

Lavatories—

Porcelain Enameled Iron.....30%

Pipe—

Cast Iron Soil—

List Feb. 25, 1901.

2 to 6 inch inclusive.

Standard..... 60@60&5%
Extra Heavy..... ...5@70%
All Fittings.....70@75%

Wrought Iron—

List Feb. 15, 1900.

Random Lengths.

	Black.	Galv.
⅛ to 1 inch	40%	20%
1¼ inch	50%	30%
1½ to 10 inch	55%	40%

NOTE.—*Manufacturers' prices are much lower than above, but prompt shipments are not obtainable.*

Sinks, Etc.— Cast Iron—

	Black.	Galv.
Sinks, Square, Half Round and Corner	60%	60@65%
Sink Legs.	60%	60@65%
Sink Backs	60%	60@65%
Cesspools, Cast Iron		60%
Boiler Stands, Cast Iron		60%

Wrought Steel Sinks—

New Era, Galv'd and Enameled. ..70&5%
New Era, Painted.....50&10%
L. & G.....50%

Traps—

Drawn Lead Traps, List June 3, 1901..... 50@50&5%

Tubs, Bath—

Cast Iron Enameled Bath Tubs.
Regular Patterns, Guaranteed..... 30&10@15%
All Special Patterns..... ..25%
Non-guaranteed Brands, complete line 15%
Solid Copper, list of Feb. 1, 1899 ....40%
Solid Porcelain—Class A, 30%; B, 40%; C, 50.
Steel Clad Copper Lined, list of Feb. 1, 1899.....15@50%

ALPHABETICAL LIST OF ADVERTISERS.

Adler, H. Co..... 14
American Hardware Mfg.Co. 85
American Radiator Co..... 19
American Sheet Steel Co....1&80
American Tin Plate Co..... 80
Arcade Mfg. Co..... 41
Armstrong Mfg. Co..... 43
Artistic Enameling Wks..... 12
Asheville Mica Co..... 37
Asphalt Ready Roofing Co... 81
Atlas Radiator Pedestal Co... 33
Auld & Conger..... 76
Ayling Bros..... 37
Barstow Stove Co..... 88
Beckwith, P. D., Est. of..... 2
Berger Bros. Co.....40&77
Berger, L. D..... 85
Berger Mfg. Co 82
Bergstrom Bros. & Co..... 27
Bertsch & Co..... 86
Bibb, B. C. Stove Co..... 16
Bliss, E. W. Co..... 86
Blodgett, G. S. Co..... 31
Boynton Furnace Co..... 6
Brand Stove Co..... 25
Brauer, A. G..... 87
Bray, J. & Co..... 76
Bridgeport Crucible Co..... 39
Brien Heater Co..... 34
Brohard Co..... 41
Brooklyn Metal Ceiling Co.... 78
Bruce & Cook.....81&88
Bruckcr, M..... 37
Buckwalter Stove Co..... 15
Burton, W. J. & Co..... 33
Butler Steel Furnace Co..... 32
Callahan, Geo. & Co..... 75
Canton Steel Roofing Co..... 88
Carroll, J. B..... 41
Castle, Wilmot & Co..... 33
Chamber of Commerce..... 75
Champion Steel Range Co.... 31
Cheney, S. & Son 1
Cincinnati Stamping Co....33&84
Clark, Henry N. Co..... 37
Clark Novelty Co..... 75
Clark, Qnien & Morse..... 79
Clason Arch. Metal Works... 77
Clayton & Lambert Mfg. Co.. 43
Clough, R. M..... 87
Colebrook, W. H. Sons & Co. 36
Colwell Lead Co..... 42
Connors, Wm. Paint Mfg. Co. 78
Cooney & Geiger..... 77
Cope, Geo. W 34
Cortright Metal Roofing Co... 84
Crosby Steam Gage & Valve Co..... 1
Curtis & Curtis Co..... 42
Dangler Stove & Mfg. Co..... 31
Dean Boiler Co..... 29
Detroit Stove Works..... 12
Dighton Furnace Co..... 26
Dixon, Jos. Crucible Co..... 41
Donaldson, O. G. & D. H..... 37
Double Trnss Cornice Brake Co 84
Dowman Mfg. Co..... 77
Drake, W. H..... 30
Drouve, G. Co..... 85
Edwards, J. H..... 42
Eclipse Stove Co..... 14
Eller, J. H. & Co..... 88
Energy Elevator Co..... 41
Enterprise Foundry Co..... 29
Enterprise Stove Co..... 14
Esterbrook's, R. Sons..... 43
Excelsior Stove Mfg. Co..... 13
Fenn, Geo. E..... 77
Floyd, Wells & Co..... 25
Follansbee Bros. Co..... 1
Forest City F'dry & Mfg. Co.. 30
Foster, F. W. Mfg. Co..... 43
Friedley & Voshardt..... 82
Frink, L P..... 88
Front Rank Steel Furnace Co 23
Fuller & Warren Co..... 1
Galesburg Cornice Works.... 83
Galt, John & Sons..... 76
Galusha Stove Co..... 9
Garry Iron & Steel Co..... 81
Garvin Machine Co 84
Genuine Bangor Slate Co..... 76
Giblin & Co.....17&21
Globe Ventilator Co..... 77
Gobeille Pattern Co..... 38
Gordon, W. J..... 87
Gorton & Lidgerwood Co..... 1
Greene, W. F., Est. of..... 38
Gummey, McFarland & Co... 79
Gurney & Co..... 32
Gurney Heater Mfg. Co..... 25
Hamlin, G. R..... 76
Hanson & Van Winkle Co..... 41
Harrington & King Perforating Co..... 70
Hart & Crouse Co..... 27
Heath, C. C. & Co..... 16
Hessler, H. E. Co..... 39
Hoffman, Geo. W..... 40
Howard Thermostat Co 28
Howes, S. M. Co.....20, 36, 37&40
Howson & Howson 75
Hungerford, U. T., Brass & Copper Co..... 87
Independent Register Co..... 84
International Correspondence Schools..... 74
International Heater Co..... 8
Janney, Steinmetz & Co..... 76
Jenkins Bros..... 1
Johnson, E. J. & Co..... 76
Joliet Stove Works..... 11
Keeley Stove Co..... 14
Keene, Geo. C. & Co 87
Kelsey Furnace Co..... 44
Kemp, C. M. Mfg. Co..... 41
Kewanee Boiler Co..... 28
Kieley & Mueller..... 1
Klauer Mfg. Co..... 77
Koven, L. O. & Bro..... 43
Lamb & Ritchie..... 43
Landers, Frary & Clark..... 43
Lawrence-Letts Elbow Co.... 40
Lennox Machine Co..... 32
Livermore, H. F..... 42
M & D Range Co..... 15
McClure & Co..... 88
McLain, J. H. Co..... 84
McLeod & Henry Co..... 1
McSherry, Chas..... 85
Magee Furnace Co .....1&22
Magoon, A. J. & Son 36
Marcy Stove Repair Co..... 39
Marlin & Co..... 82
Marston, I. G. & Co..... 42
Meurer Bros. Co..... 79
Meyer, F. & Bro. Co 25
Michigan Stove Co.....4&5
Millar, Chas. & Son Co..... 88
Miller, Wm. Range & Furnace Co..... 8
Miner & Peck Mfg. Co 41
Montross Metal Shingle Co.... 83
Morgan & Co..... 42
Mueller, L. J. F'ce Co..... 26
Munsell, E. & Co..... 36
National Enameling & Stamping Co..... 44
National Pipe Bending Co.... 30
Newton, Wm. M..... 1
New York Iron Roofing & Corrugating Co..... 79
New York Trade School..... 74
Niagara Machine & Tool Wks. 85
Noyes & Nutter Mfg. Co..... 30
O'Halloron & Jacobs..... 76
Ohio Mica Co..... 37
Ohio Stove Co..... 10
Ohl, Geo. A. & Co..... 86
Osborn, J. M. & L. A 81
Ostrander, W. R. & Co..... 87
Palermo Mica Co.. 36
Peck, Stow & Wilcox Co..... 85
Perfection Furnace Pipe Co.. 35
Perkins, J. L. & Co..... 39
Phila. Machine Tool Co..... 85
Phila. Stove & Iron Fdry..... 13
Pierce, Butler & Pierce Mfg. Co..... 33
Pittsburgh Stove & Range Co.19
Pocock, Oliver..... 84
Portsmouth Stove & Range Co..... 22
Preshrey Stove Lining Co..... 39
Reading Stove Works..... 18
Reeves Mfg. Co..... 78
Resor, Wm. & Co..... 6
Rhodes, L. E. Co..... 41
Richmond Stove Co..... 34
Ringen Stove Co..... 7
Robinson, J. M. & Co..... 87
Rochester Radiator Co..... 32
Rutland Fire Clay Co..... 38
Sackman, F. A..... 75
Safety Furnace Pipe Co..... 28
Salem Nail Co..... 77
Samuel, M. & L. Benjamin & Co..... 81
Sanborn, John..... 81
Saunders', D. Sons..... 42
Schaffer, John P..... 29
Schill Bros. Co..... 23
Schratwiesers Metal Lath Works..... 81
Schulte, John A. & Co..... 12
Schwab, R. J. & Sons Co..... 26
Schwerdtle Stamp Co..... 76
Seavey Mfg. Co..... 84
Sheppard, Isaac A. & Co..... 1
Silver & Co..... 75
Smith, H. B. Co..... 24
Smith & Anthony Co..... 88
Smith, Chahot & Co..... 32
Smith & Thayer Co 32
Smith-Warren Co..... 78
Special Notices..... 74
Sperry, D. R. & Co..... 75
Stamford Foundry Co 33
Stanton Heater Co..... 27
Stiles & Parker Press Co..... 86
Stocking, E. B..... 75
Stolz, Frank D..... 30
Stover Mfg. Co 40
Stowell Mfg. Co..... 75
Stuber & Knck..... 34
Taylor & Boggis Fdry. Co.... 40
Taylor Co., N. & G..... 88
Townley, H. P..... 74
Trimont Mfg. Co..... 41
Troy Nickel Works..... 39
Tubular Heating & Ventilating Co..... 20
Tucker & Dorsey Mfg. Co.... 36
Union Stove Repair Co..... 38
Utica Heater Co..... 23
Valentine, M. D. & Bro. Co... 39
Vance Boiler Works..... 30
Vanderman Plumbing & Heating Co..... 42
Vedder Pattern Works..... 40
Vogel, William & Bros 75
Vulcan Metal Refining Co.... 74
Vulcan Western Co..... 74
Walker & Pratt Mfg. Co..... 9
Washburne, E. G. & Co.....77&84
Watson, Jas. H. Est..... 84
Wayne, Anthony Mfg. Co.... 76
Weir Stove Co..... 88
Weiss, H. & Co..... 87
Wheeler, W. A..... 87
Williams Stove Lining Co.... 38
Wireton Heating Co..... 32
Wister, L. & R. & Co 88
Wolff, L. Mfg. Co..... 42
Wood & Bishop Co..... 84
Wood, Alan Co..... 81
Young, Jos. H..... 43
Zero Valve & Brass Mfg. Co.. 43
Zucker & Levett & Loeb Co.. 41

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SEE ALPHABETICAL INDEX, PAGE 70.

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Vedder Pattern Works, Troy, N. Y.

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Union Stove Repair Co., Chicago, Ill.

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Troy Nickel Works, Troy, N. Y.

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Tucker & Dorsey Mfg. Co., Indianapolis, Ind.

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Detroit Stove Works, Detroit, Mich.
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Magee Furnace Co., Boston, Mass.
Michigan Stove Co., Chicago, Ill.
Ohio Stove Co., Portsmouth, O.
Phila. Stove & Iron Foundry, Phila., Pa.
Pittsburgh Stove & Range Co., Pittsburgh, Pa.
Portsmouth Stove & Range Co., Portsmouth, O.
Reading Stove Works, Reading, Pa.
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Ringen Stove Co., St. Louis, Mo.
Schill Bros. Co., Crestline, O.
Schulte, John A. & Co., Cincinnati, O.
Sheppard, Isaac A. & Co., Phila., Pa.
Smith & Anthony Co., Boston, Mass.
Stamford Foundry Co., Stamford, Ct.
Walker & Pratt Mfg. Co., Boston, Mass
Weir Stove Co., Taunton, Mass.

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Detroit Stove Works, Detroit, Mich.
Dighton Furnace Co., Taunton, Mass.
Miller, Wm. Range & Furnace Co., Cincinnati, O.
Ringen Stove Co., St. Louis, Mo.

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Niagara Machine & Tool Wks., Buffalo, N. Y.
Ohl, Geo. A. & Co., Newark, N. J.
Peck, Stow & Wilcox Co., 27 Murray St., New York.
Stiles & Parker Press Co., Brooklyn N. Y.
Weiss, H. & Co., 20 Cliff St., N. Y.

Tinners' Trimmings.
Vogel, Wm. & Bros. Brooklyn, N. Y

Tin Plate.
American Tin Plate Co., New York.
Berger, L. D., Philadelphia, Pa.
Bruce & Cook, 186 to 190 Water St., New York.
Follansbee Bros. Co., Pittsburgh, Pa.
Gummey, McFarland & Co., Phila., Pa.
McClure & Co., Pittsburgh, Pa.
Meurer Bros. Co., Brooklyn, N. Y.
Osborn, J. M. & L. A., Cleveland, Ohio.
Samuel, M. & L. Benjamin & Co., Toronto, Can.
Taylor, N. & G. Co., Philadelphia, Pa.

Tin Scrap.
Vulcan Metal Refining Co., 157 Cedar St., N. Y.
Vulcan Western Co., Streator, Ill.

Tools and Machines, Steam and Gas Fitters'.
Armstrong Mfg. Co., Bridgeport, Conn
Curtis & Curtis Co., Bridgeport, Conn.
Livermore, H. F., Boston, Mass.
Saunders', D. Sons, Yonkers, N. Y.

Torches, Plumbers.
Clayton & Lambert Mfg. Co., Detroit, Mich.

Trade Schools.
New York Trade School, First Ave., 67th and 68th Sts., New York.

Valves.
Crosby Steam Gage & Valve Co., Boston, Mass.
Jenkins Bros., 71 John St., New York.
Morgan & Co., Chicago.

Ventilators and Chimney Caps.
Berger Bros. Co., Phila., Pa.
Dowman Mfg. Co., Atlanta, Ga.
Fenn, Geo. E., Boston Mass.
Globe Ventilator Co., Troy, N. Y.
Meurer Bros. Co., Brooklyn, N. Y.
Washburne, E. G. & Co., 46 Cortlandt St., New York.

Washers, Valves, &c.
Marston, I. G. & Co., Boston, Mass

Washing Machines.
Wayne Anthony Mfg. Co., Ft. Wayne, Ind.

Water Coolers.
National Enameling & Stamping Co., 78 Beekman St., N. Y.

Water Closets.
Colwell Lead Co., 63 Centre St., N. Y.
Zero Valve & Brass Mfg. Co., Buffalo, N. Y.

Water Fronts.
Clark, Henry N. Co., Boston, Mass.
Donaldson, O. G. & D. H., Buffalo, N. Y.

Water Heaters.
Kemp, C. M. Mfg. Co., Baltimore, Md.

Water Lifts.
Rhodes, L. E. Co., Hartford, Conn.

Wind Gates.
Miner & Peck Mfg. Co., New Haven Ct.

Window Frames, Metal.
Smith-Warren Co., Boston, Mass.

SEE ALPHABETICAL INDEX, PAGE 70.

THE METAL WORKER.

With which is Incorporated The Stove and Tin Trade Journal, The Sheet Metal Builder, and Metal.

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LABOR EXCHANGE.

Notices under this heading of reasonable length are inserted free of charge. Only those relating to employment are admitted. Write distinctly on one side of paper only, and do not use postal cards.

Official letters of reference should not be inclosed with replies to advertisements appearing in these columns as they are frequently mislaid and lost. A copy of the reference will serve the purpose.

HELP WANTED.

A first-class man, thoroughly conversant with the cornice and roofing business; must be able to figure all work usual to a shop of this kind and to get business. "W. R. C.," care *The Metal Worker*, New York. Sept. 28

Wanted at once, several competent union PLUMBERS and TINNERS; preference to men who can handle both lines. G. E. Adams & Co., Glens Falls, N. Y. Sept. 28

Wanted, a TINSMITH and JOBBER for country shop with some knowledge of steam heating and plumbing; must be sober and honest and willing to look after store at times; steady work the year around; living cheap; give references and wages wanted. Wm. C. Cook, Branchville, N. J. Sept. 28

To correspond with thoroughly experienced SUPERINTENDENT of soil pipe foundry with a view to his employment. "Soil Pipe," care *The Metal Worker*, New York. Sept. 28

Wanted, two good TINNERS who understand hot air furnace work and general jobbing; steady job for good men, eight hours and good wages; come at once. Geo. Rome & Co., Carnegie, Pa. Sept. 28

A first-class PLUMBER and GAS FITTER; must be strictly sober; permanent position. E. F. Broderick, Savannah, Ga. Sept. 28

SLATERS and TINNERS; two good men immediately; state experience and wages wanted or apply in person to Blowers & Smith, 252 West Main street, Springfield, Ohio. Sept. 28

Two TINSMITHS wanted at once; accustomed to furnace work, roofing and general jobbing; in country shop; none but experienced, reliable and sober men need apply; steady position to right party. Call at once or address Fowler & Sellars, White Plains, N. Y. Sept. 28

GENERAL SUPERINTENDENT and FOREMAN; must be thoroughly competent and reliable, a good handler of men, all around hustler, first-class mechanic and good designer for mechanical department in wrought iron novelty and sheet metal works; applicants should state fully experience, with reference and salary expected; growing position for the right man. "Manufacturer," P. O. Box 175, Cincinnati, Ohio. Sept. 28

Thoroughly competent SCROLL WORKERS and FINISHERS in wrought iron novelty and sheet metal works; first-class mechanics need only apply. "Manufacturer," P. O. Box 175, Cincinnati, Ohio. Sept. 28

Energetic boy of 16 or 17 years of age, with good common school education, who wants to learn the trade of tinning and plumbing; no cigarette smokers or drinkers wanted. Address in own handwriting, L. N. Hoover, Milroy, Pa. Sept. 28

STEAM FITTER, also good TINSMITH. Apply to Mills & McClintock, rear 22 Main street, Haverhill, Mass. Sept. 28

SALESMEN wanted; high class, intelligent men with experience in selling to both jobbers and retailers, to handle a long line of stoves, gasoline goods and metal ware for a prominent manufacturer. "Long Line," care *The Metal Worer*, New York. Sept. 28

Two strictly first-class SHEET IRON and TIN WORKERS. Apply at once to John H. Taylor & Bro., 219 Glen Ridge avenue, Montclair, N. J. Sept. 28

A man with sufficient experience in the stove business to assume the management of the sales department of a reputable establishment; state present employment, character and duration of past experience and general fitness to fill position indicated. Communicate with "Experience, 928," care *The Metal Worker*, New York. Sept. 28

A competent man to take general supervision of the manufacturing departments of a well established stove foundry; state past experience, present employment and qualifications for position. "Foundryman," care *The Metal Worker*, New York. Sept. 28

A first-class TINNER with experience on coffee urn work; none other need apply; steady work. "Tinner," Room 305, 306 Bell Block, N. E. corner Sixth and Vine streets, Cincinnati, Ohio. Sept. 28

TIN ROOFERS; first-class men only; steady work, highest wages. Meade Roofing & Cornice Company, 3717 Filbert street, Philadelphia. Sept. 28

First-class PLUMBER and GAS FITTER, one with license preferred, to take charge of an established shop; must furnish A1 references; permanent position to right party; no capital required. "Manhattan," care *The Metal Worker*, New York. Sept. 28

At once, a PLUMBER and TINSMITH; will pay $2.50 per day to a good sober man that can do my work; come at once. Geo. W. Gibney, Pawling, N. Y. Sept. 28

Several good CORNICE MAKERS to begin work at once. Apply to Hugh C. Lendrim, 82 Clay street, Paterson, N. J. Sept. 28

Man familiar with stove trade to handle stove repairs as a side line on a salary basis for territory tributary to Chicago. Box 141, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Sept. 21

Have a good opening for an all around man; one who can do tin work, some plumbing, pump work, &c.; will pay such a man $2.25 per day the year around as long as he wants to remain; do not want a drinking man. Box 142, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Sept. 21

A FOREMAN for large cornice and skylight shop in Greater New York; only a man who is competent to handle 30 to 40 workmen and machine hands need apply; references required, also state wages desired and experience. "A. B. C.," care *The Metal Worker*, New York. Sept. 21

A young man of good family and some experience as BOOKKEEPER and SALESMAN in a well known manufacturing business; reference required. "R. H. C.," care *The Metal Worker*, New York. Sept. 21

First-class FURNACE SALESMAN; one thoroughly familiar with trade in the New England States; can commence business now or January 1; splendid opening for bright, energetic, capable man; permanent employment. "Heat," care *The Metal Worker*, New York. Sept. 21

In New England States, January 1, 1902, first-class STOVE SALESMAN; one having large acquaintance with the furniture trade preferred; references. "Cooking," care *The Metal Worker*, New York. Sept. 21

High grade TRAVELING SALESMAN; patented tool that joins lead pipes quicker and better than the plumbers wipe joints; big money to the right man. Bailey-Farrell Mfg. Company, Pittsburgh, Pa. Sept. 21

At once, an all around MECHANIC, PLUMBER, TINNER, GENERAL JOBBER; good wages year round; married man about 30 years preferred. Box 135, Port Henry, N. Y. Sept. 21

An up to date CORNICE MAN who understands laying out and making all kinds of work; general jobber for shop work; nice town, healthy climate; only sober men need apply. R. E. Hogan, Wilson, N. C. Sept. 21

A good, experienced TINSMITH; steady work for the right man. M. McFadden, 301 Burnett street, New Brunswick, N. J. Sept. 21

Three SHEET IRON WORKERS, good at riveted work; steady job; state wages, experience and where employed. "D. N.," Station A., Boston, Mass. Sept. 21

A good all around TIN and SHEET IRON WORKER; one who understands ordinary plumbing, fixing pumps, and work generally done in a country shop. Geo. H. Smith, Port Jefferson, L. I., N. Y. Sept. 21

Thoroughly competent TINSMITH who has knowledge of plumbing and iron pipe work to take permanent position in country shop; two men and apprentice employed; very little roofing; cheap rents; water works; chance for advancement. "Permanent," Box 25, Milroy, Pa. Sept. 21

SITUATIONS WANTED.

As FOREMAN in cornice and skylight works. "G. H. W.," care *The Metal Worker*, New York. Sept. 28

Young man, 32, reliable and honest, would like work in tin and sheet iron shop; general jobbing; nine years with last employer; references. Wm. Schulz, 331 East Thirtieth street, New York. Sept. 28

A good first-class TIN ROOFER and JOBBER, with HELPER, would like an out of town position where there is work all winter round. John Steffens, 47 Milford street, Brooklyn, N. Y. Sept. 28

As STOVE and RANGE SALESMAN, by a young man thoroughly versed in the business; both manufacturing and road experience; can furnish best of references. "Stoves and Ranges," care *The Metal Worker*, 1205 Chemical Building, St. Louis, Mo. Sept. 28

Permanent position by a strictly first-class all around TIN and SHEET IRON WORKER; range, heater and expert hot air furnace hand; good general in and outside worker on any class of work; can cut patterns, manage shop and handle men to advantage. Wm. Carroco, 723 West Mulberry street, Baltimore, Md. Sept. 28

TINNER of 16 years' experience in all lines of inside and outside work; hot air furnace work, &c.; strictly sober. Box 108, Wilmette, Cook County, Ill. Sept. 28

A TRAVELER in West Virginia calling on the hardware and stove trade wants to sell on commission a line of stoves and specialties. Box 145, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Sept. 28

Competent ROOFING and SHEET METAL ESTIMATOR wants position with first-class house to estimate and follow up business. "J. C. P.," care *The Metal Worker*, New York. Sept. 28

Young man desires position as BOOKKEEPER or AUDITOR; has had 12 years' experience; is familiar with the malleable and steel range business. Box 144, care *The Metal Worker*, 1205 Fisher Building, Chicago, Ill. Sept. 28

By TINSMITH and SHEET IRON WORKER; understands furnace and general jobbing; all around man; steady work. L. Mickenberg, 27 Selgel street, Brooklyn, N. Y. Sept. 28

By first-class PLUMBER; reference furnished. P. J. Kelly, 132 Gold street, Brooklyn, N. Y. Sept. 28

As CUTTER or WORKING FOREMAN in cornice shop by one who understands cutting and estimating and can handle men to advantage. "B. S.," care *The Metal Worker*, 70 Kilby street, Boston, Mass. Sept. 28

By SALESMAN with large wholesale and retail stove house; fully qualified; good references given. 227 Water street, New York. Sept. 28

First-class TRAVELING SALESMAN, thoroughly familiar with the tin plate, furnace and stove trade, also plumbing supply, would like position with first-class house; best of reference. "J. M.," Post Office, Elizabeth, N. J. Sept. 28

If you are looking for a first-class PLUMBER that can do good tin, sheet iron and furnace work, I would be pleased to correspond with you; am willing to go on trial; if you have not a steady job and good pay for a man that would suit you, please do not answer this. Lock Box 72, Marlboro, Mass. Sept. 28

In eastern part of New York State, by a first-class STEAM and HOT WATER FITTER; can estimate, solicit and lay out work. "Steamfitter," 83 Frost avenue, Rochester, N. Y. Sept. 28

In machine, tin or brass shops, on assembling, drill, or milling, soldering, filing, &c., by a man with over 20 years' experience; can also help at steam, gas fitting and plumbing. "Martin," care of Ross, 301 Sixth street, Brooklyn, N. Y. Sept. 28

By a first-class TIN and SHEET IRON WORKER; cut patterns and erect work from blue prints and drawings; references. M. Bloom, 181 East Broadway, New York. Sept. 28

Practical STOVE and RANGE FOUNDRYMAN with 20 years' experience as the practical man of large stove plants; desires to make a change now or January 1; am able to handle large plant; practical in every department of an up to date stove and range foundry; am familiar with setting prices on piecework men and of mixing and grading irons; can handle men to good advantage; a trial will be sufficient to convince. "Practical Foundryman," care *The Metal Worker*, New York. Sept. 28

First-class PLUMBER desires steady work in country town. "A. S.," 1237 Third avenue, New York. Sept. 28

First-class PLUMBER desires steady work in country town. F. Hamaun, 760 East 149th street, New York. Sept. 28

By a young, single and steady man, as GENERAL JOBBER in tin and sheet iron, roofing, gutters and spouting, stoves and furnace work, pumps and iron pipe work, in or outside work; 15 years at the trade; wages $2 per day at steady work. J. H. Smith, 413 West Sixth street, Cincinnati, Ohio. Sept. 21

By a first-class TIN and SHEET IRON WORKER; 18 years' experience, two years as foreman; at present employed but would like a change; would like to take charge of tinsmithing department of some large manufacturing company in or near New York City; strictly temperate and reliable; best of references; want steady job. F. H. Potter, 1372 Brook avenue, New York. Sept. 21

WANTED

A large cornice concern with a strictly first-class plant (10 ft. power machines, etc.) now making a specialty of manufacturing shutterless, automatic, self-closing, fire-proof, hollow metal windows, glazed with wire glass, desires the services of a young man with some capital to take part interest and devote entire services; must thoroughly understand the sheet metal business in all its branches. Address H. COLLIER SMITH, Potter St., East Cambridge, Mass.

SITUATION WANTED.

By A 1 Estimator, Stove and Heating Salesman and Bookkeeper; shall be open for a year's engagement by Nov. 1st or sooner if desired; am competent man of long experience; steady and of good habits and fair address; claim to be an exceptionally fine heating man and one who has had vast experience on large work; am a fair draftsman; am connected at present time with a large city concern, but desire a change to where the head of the firm is connected with the business and where ability can be shown and seen; am A 1 estimator on all classes of plumbing, steam and hot water and hot air natural draft systems of heating, also all classes of tin and sheet metal work and roofing and cornice work; am well grounded on business methods; will accept situation as manager and buyer and salesman or as salesman and estimator or anything that will combine, for some live firm that is used to catering for contract work and building trade, and one who desire only a fair profit and who have some system, or will install a system, of carrying out work to its full capacity of speed; expect fair salary or will work on profit sharing basis with some reliable firm.

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A second-hand 6 ft. Brake in good order. A dress

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Care *The Metal Worker*, Fisher Bldg., Chicago.

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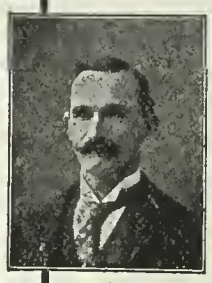

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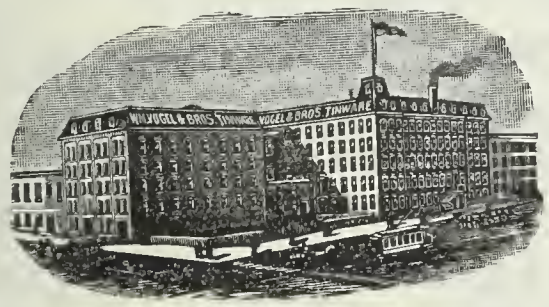

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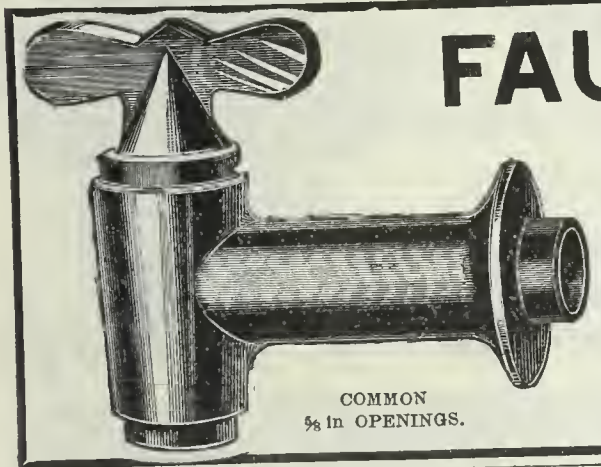

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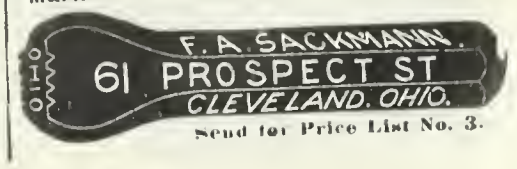

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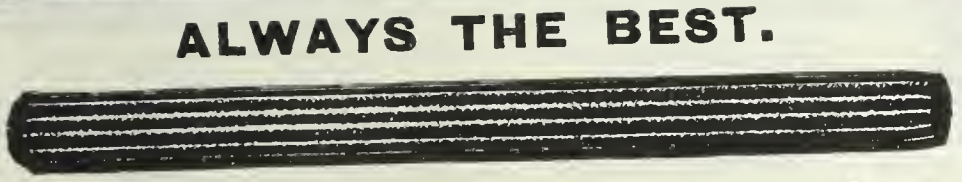

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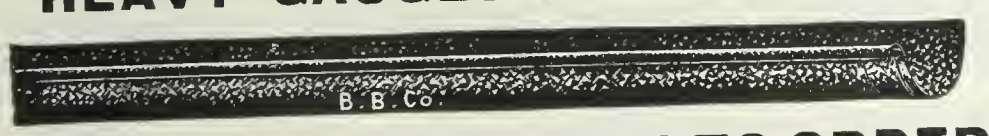

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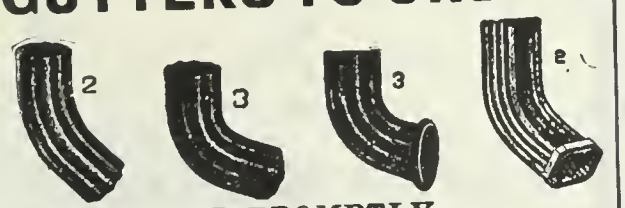

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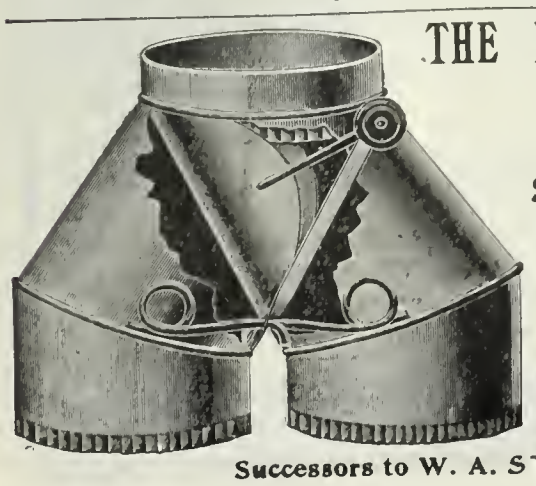

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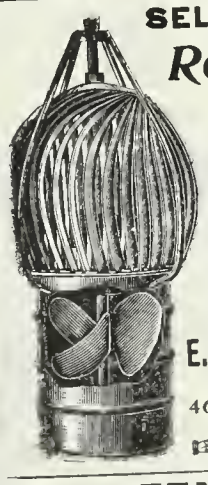

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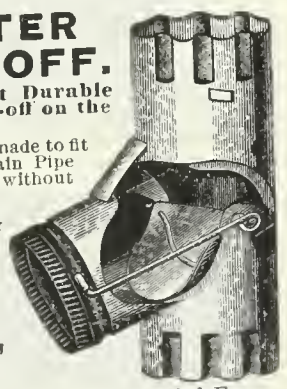

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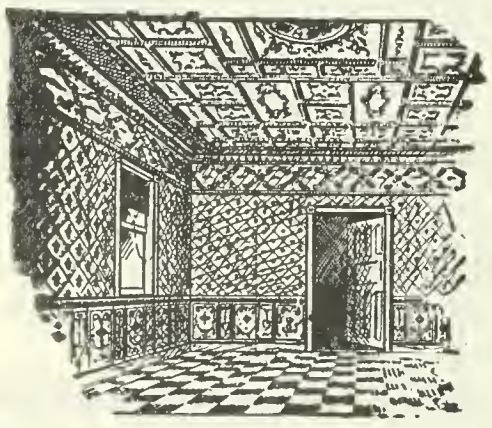

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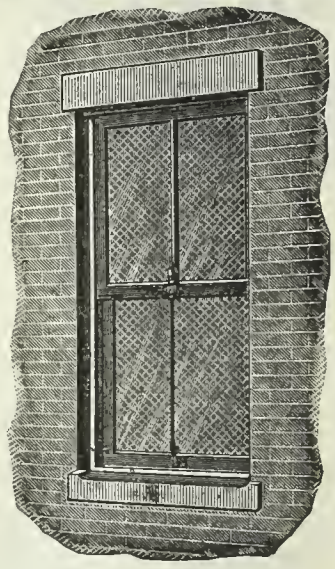

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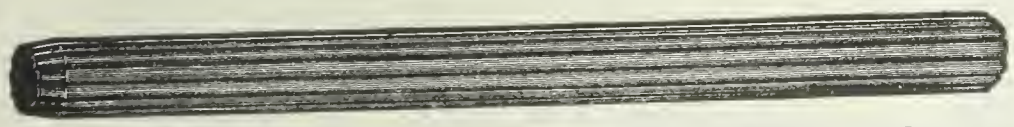

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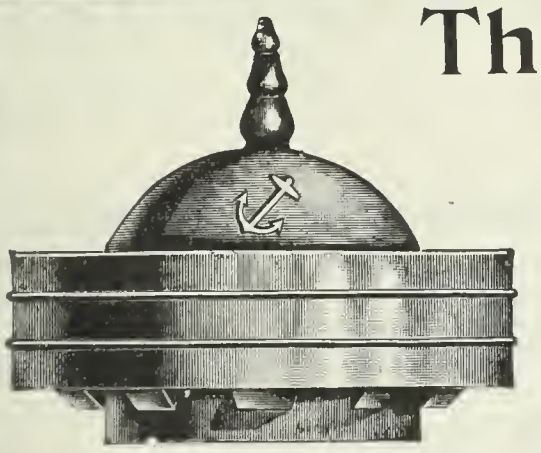

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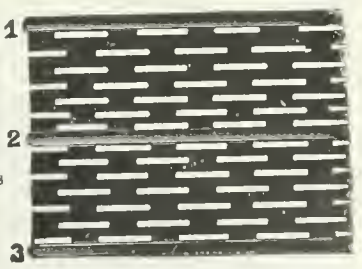

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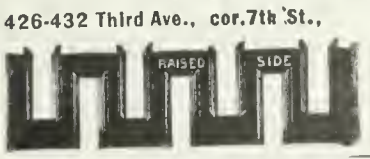

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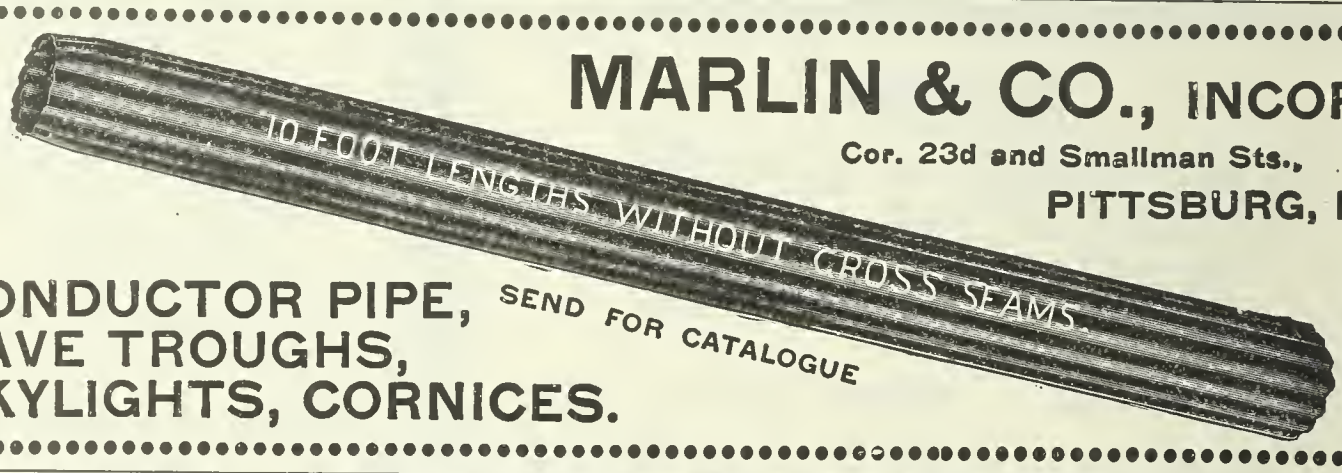

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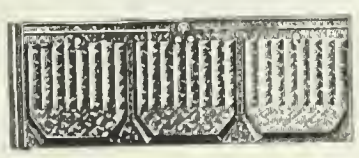

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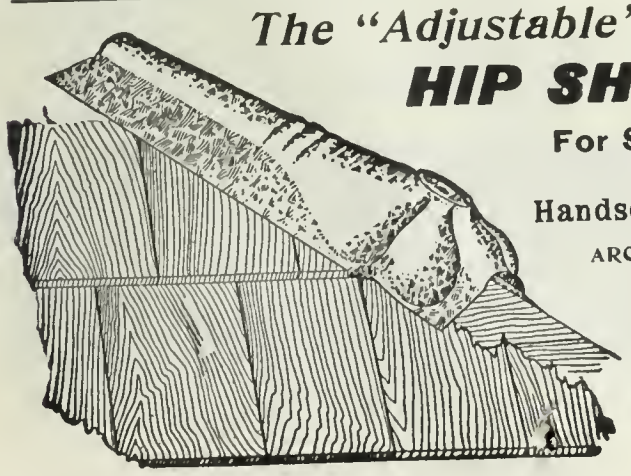

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ARRANGEMENT.

In point of arrangement the new work far surpasses the former one in that the problems are classified under three different heads, and simply indexed, and also that by means of a table of contents any required department of the work can be easily found.

CONTENTS.

While Chapter VI, comprising the greater part of the work, is devoted to the solution of problems, the five preceding chapters thoroughly explain the principles of pattern cutting, and place the student in possession of the preliminary information necessary to a thorough understanding of the subject.

SUMMARY OF CONTENTS.

I. Terms and Definitions—15 pages.
II. Drawing Instruments and Materials—13 pages.
III. Linear Drawing—6 pages.
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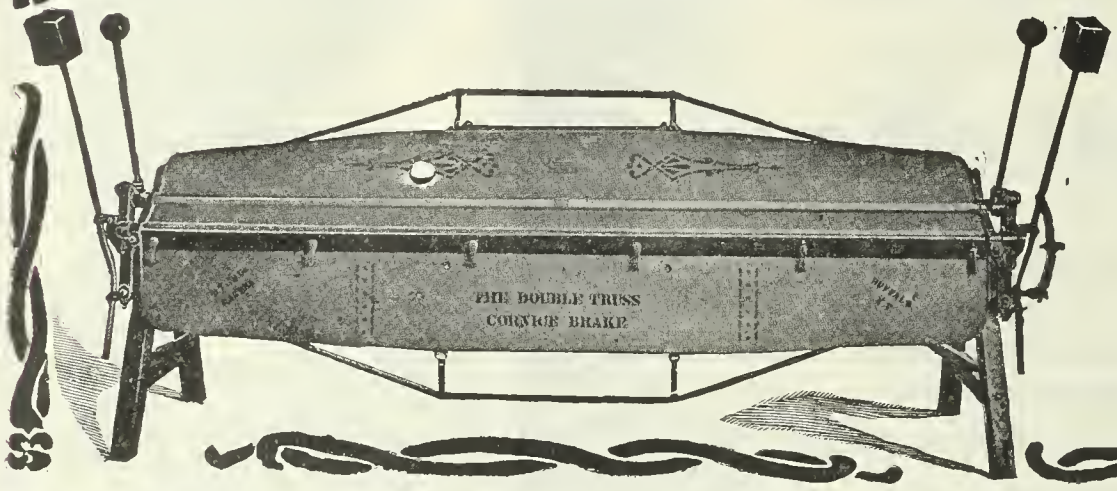

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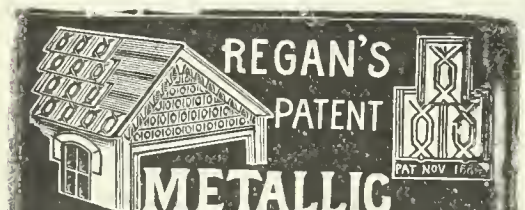

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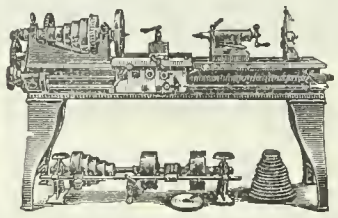

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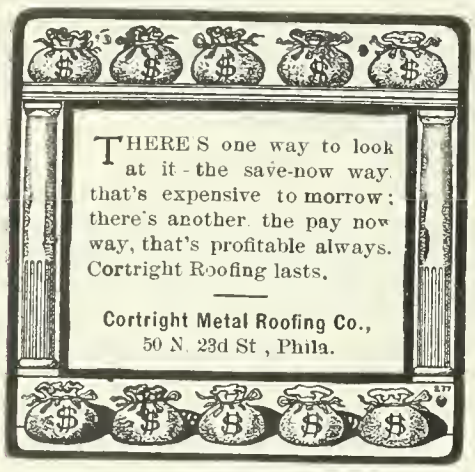
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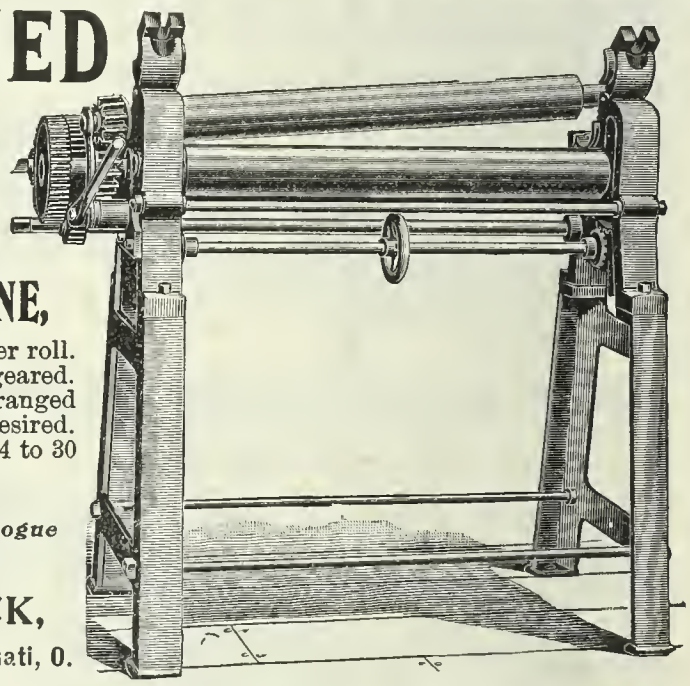

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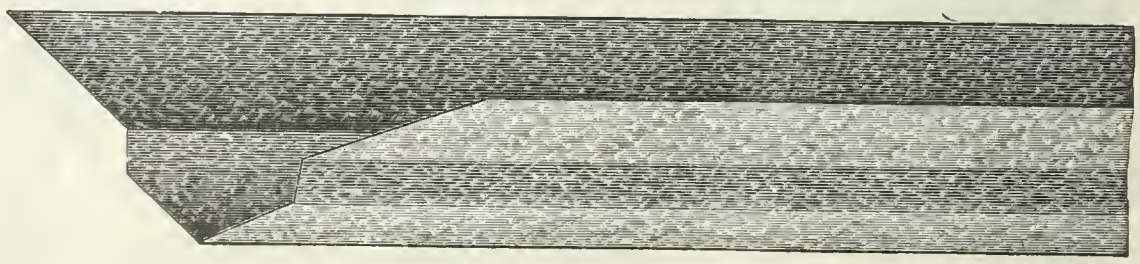

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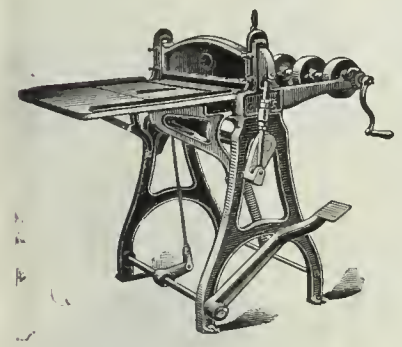

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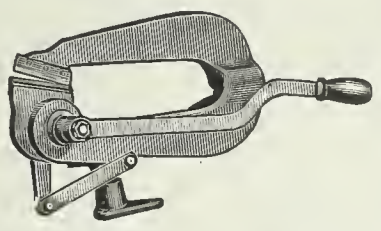

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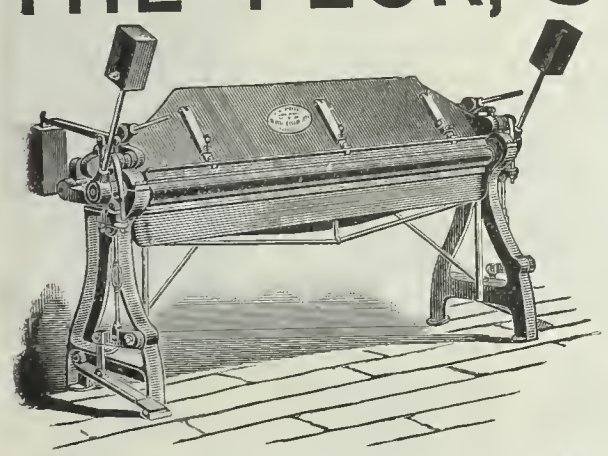

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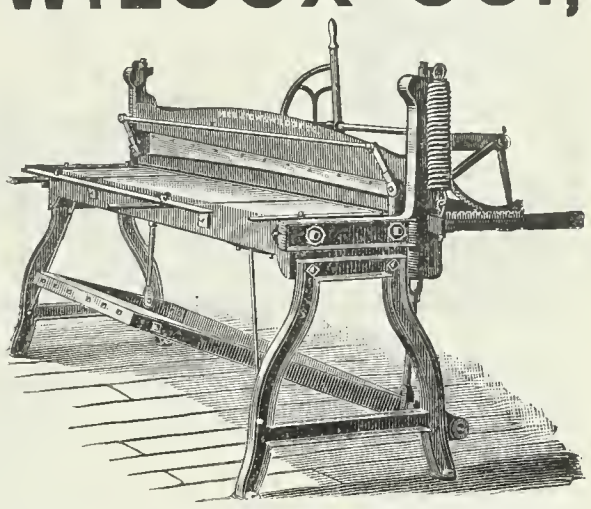

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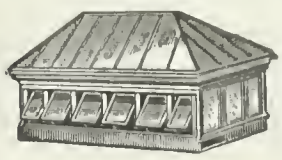

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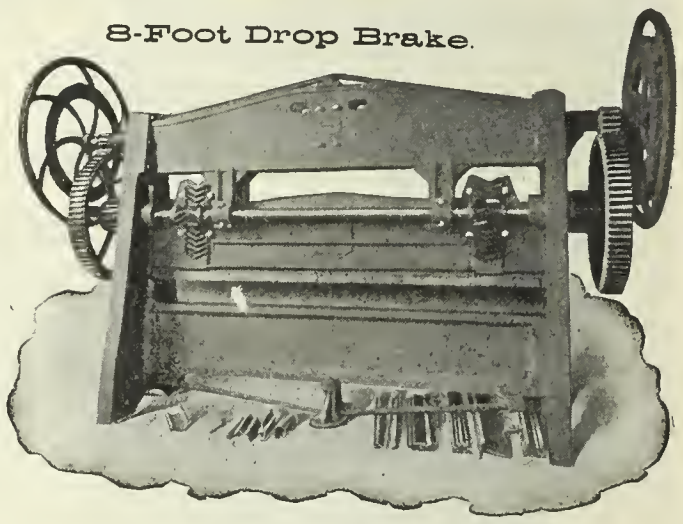

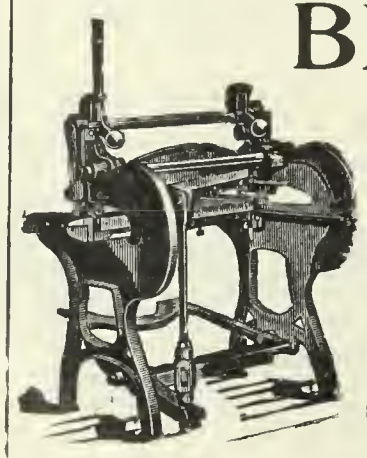

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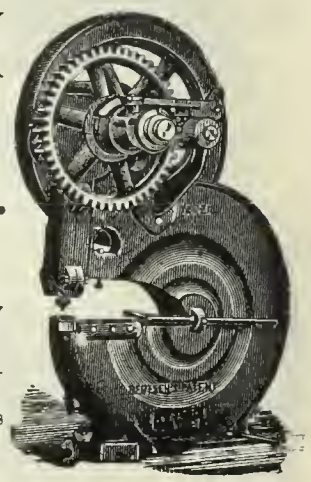

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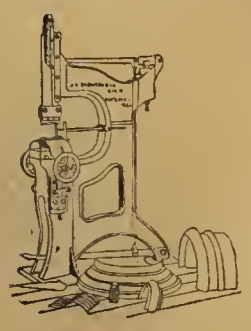

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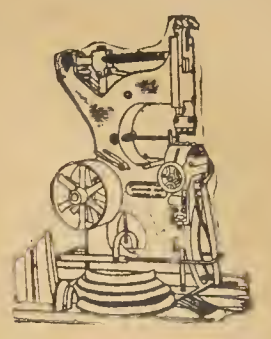

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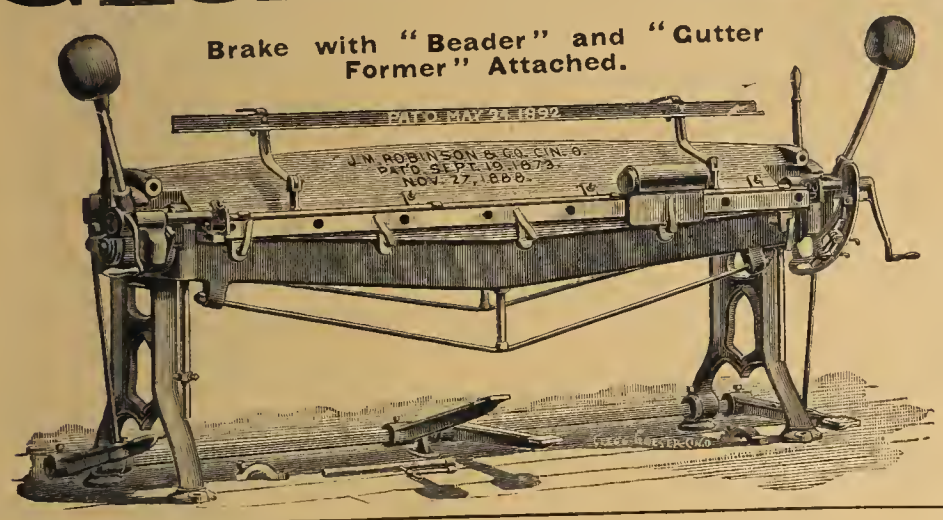

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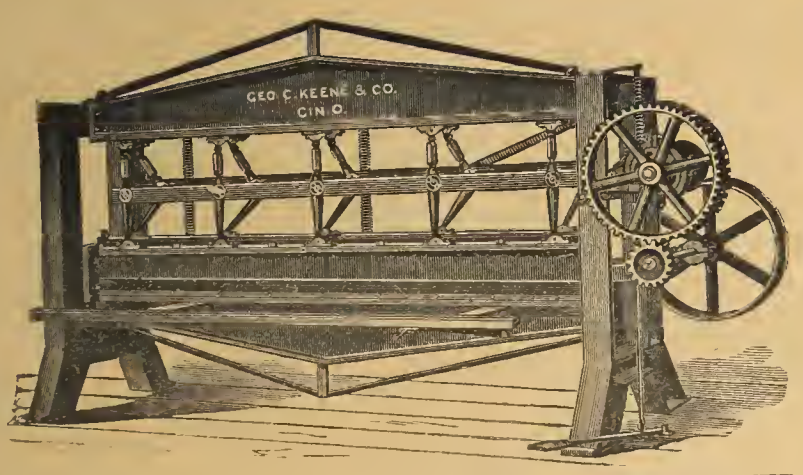

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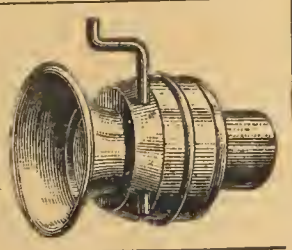

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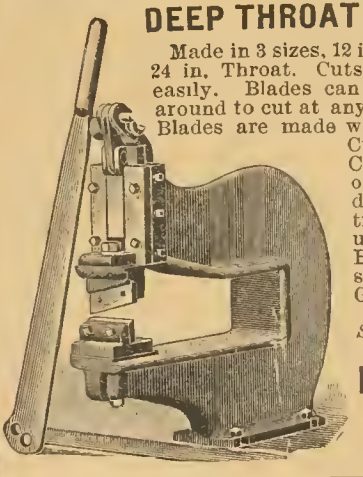

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